

THOMASON
COLLEGE OF CIVIL ENGINEERING
ROORKEE, U. P.

— — —
CALENDAR
1935-36



ALLAHABAD
SUPERINTENDENT, PRINTING AND STATIONERY, UNITED PROVINCES
1935

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THOMASON COLLEGE OF CIVIL ENGINEERING.

CALENDAR, 1935-36 SESSION.

GENERAL AND OFFICE.

OCTOBER, 1935.

Days of week	General and Office
T	Rent roll to Accountant General, United Provinces Allahabad.
W	
Th	
F	
S	
S	} <i>Dussehra</i>
M	
T	
W	
Th	
F	
S	
S	
M	
T	
W	All new students join All old students join. 1935-36 Session starts Full working day
Th	
F	
S	
S	
S	
M	
T	
W	
Th	
F	
S	
S	
M	
T	
W	} <i>Dussehra</i>
Th	

NOVEMBER, 1935.

Date	Days of week	General and Office
1	F	Rent roll to Accountant General, United Provinces Allahabad
2	S	Letter to Commandant S and M Roorkee for fixing date of examination in riding
3	S	
4	M	
5	T	
6	W	
7	Th	
8	F	Indent for periodicals to High Commissioner for India, London
9	S	
10	S	<i>Guru Nanak's birthday</i>
11	M	
12	T	<i>Shab-e-Barat</i>
13	W	
14	Th	
15	F	
16	S	
17	S	
18	M	
19	T	
20	W	
21	Th	
22	F	
23	S	
24	S	
25	S	
26	T	
27	W	
28	Th	
29	F	
30	S	

DECEMBER, 1935.

JANUARY, 1936.

Date	Days of week.	General and Office	Date	Days of week	General and Office
1	S	Pent roll to Accountant General, United Provinces Aligarh	1	W	<i>New Year's Day.</i>
2	M		2	'	"
3	T		3	'	"
4	W		4	S	" papers
5	Th		5	S	Paper in book keeping for Overseas Class 2nd year
6	F		6	M	
7	S		7	T	
8	S	<i>Dussehra Day</i>	8	W	Indent of treasury forms
9	M		9	Th	
10	T		10	F	
11	W		11	S	Mid-annual examinations for 2nd year Civil Engineer Class start
12	Th		12	S	
13	F		13	M	
14	S		14	T	
15	S	Return of ex-officers employed in civil departments	15	W	
16	M		16	Th	
17	T		17	F	
18	W		18	S	
19	Th		19	S	2nd year Civil Engineer Class survey camp starts
20	F		20	M	
21	S		21	T	
22	S	Christmas Vacation commences	22	W	
23	M		23	Th	
24	T		24	F	
25	W		25	S	
26	Th		26	S	<i>Ramzi Panchmi</i>
27	F		27	M	
28	S		28	T	
29	S	} 12th Fide	29	W	
30	M		30	Th	
31	T		31	F	

FEBRUARY, 1936

MARCH, 1936.

Date	Days of week	General and Office	Date	Days of week	General and Office
1	S		1	S	
2	S		2	M	Apply for supply of weather report form to the Director General of Observatories
3	M	Mid-session examinations for 1st and 3rd year Civil Engineer Classes and 1st and 2nd year O S Classes start	3	T	
4	T		4	W	
5	W		5	Th	<i>Id-uz Zuha</i>
6	Th		6	I	
7	F		7	S	<i>Hols</i>
8	S		8	S	<i>Hols</i>
9	S		9	M	
10	M		10	T	
11	T		11	W	
12	W		12	Th	
13	Th		13	F	
14	F		14	S	Indent of provincial forms to the Director of Public Instruction United Provinces
15	S	2nd year Civil Engineer Class survey camp ends.	15	S	
16	S	2nd Session begins	16	M	
17	M		17	T	
18	T		18	W	
19	W		19	Th	
20	Th		20	F	
21	F		21	S	
22	S		22	S	
23	S	Arrange for Lecturer in Geology	23	M	Certificate of court forms to be supplied to officers
24	M		24	T	
25	T		25	W	
26	W		26	Th	
27	Th		27	F	
28	I		28	S	Letter to Director of Public Instruction United Provinces regarding training of apprentice overseers
29	S		29	S	
			30	M	
			31	T	Syllabi of courses to be sent to Director of Public Instruction, United Provinces

APRIL, 1936

Date	Days of week	General and Office
1	W	Send roll to Accountant General United Provinces Allahabad Arrange for Lecturer in Accounts
2	Th	Muharram
3	F	Muharram
4	S	Debit of cost of training to be raised Registration of telegraphic address of college
5	S	
6	M	
7	T	
8	W	Correction to register of college buildings to Director of Public Instruction United Provinces
9	Th	
10	F	Cool Eri Jay
11	S	Saturday before Easter
12	S	Harbour Fair Easter Day
13	M	Easter Monday
14	T	
15	W	
16	Th	
17	F	
18	S	
19	S	
20	M	
21	T	
22	W	
23	Th	
24	F	
25	S	
26	S	
27	M	
28	T	
29	W	
30	Th	

MAY, 1936

Date	Days of week	General and Office
1	I	Send roll to Accountant General United Provinces Allahabad
2	S	Sanction by allowances from private funds to superintendent of office and cashier to be applied for
3	S	
4	M	
5	T	
6	W	
7	Th	
8	I	
9	S	
10	S	
11	M	
12	T	
13	W	Statistical return to be sent to Director of Public Instruction United Provinces
14	Th	
15	I	Detailed statement of permanent establishment to the Accountant General United Provinces Allahabad
16	S	
17	S	
18	M	
19	T	
20	W	Schedule of new demands to Director of Public Instruction United Provinces
21	Th	
22	F	
23	S	
24	S	Empire Day
25	S	
26	T	
27	W	
28	Th	
29	I	
30	S	
31	S	

JUNE, 1936

JULY, 1936

Date	Days of week	General and Office	Date	Days of week	General and Office
1	M	Rent roll to Accountant General United Provinces Allahabad Confidential report on gazetted officers to be sent to Director of Public Instruction United Provinces All entrance examinations start Annual Regatta	1	W	Rent roll to Accountant General United Provinces Allahabad
2	T		2	Th	Statement of probable expenditure on stores from England for coming year
3	W	Bara Wafat	3	I	
4	Th	King Emperor's Birthday subject to notification	4	S	
5	F		5	S	
6	S		6	M	
7	S		7	T	
8	M	Final examinations for all classes start	8	W	
9	T		9	Th	
10	W		10	F	
11	Th		11	S	
12	F		12	S	
13	S		13	M	
14	S		14	T	
15	M		15	W	Probable date of annual Convocation and Prize giving
16	T		16	Th	Annual vacation starts
17	W		17	F	
18	Th		18	S	
19	F		19	S	
20	S		20	M	
21	S		21	T	
22	M		22	W	
23	T		23	Th	
24	W		24	F	
25	Th		25	S	
26	F		26	S	
27	S		27	M	
28	S		28	T	
29	M		29	W	
30	T	Return of ex-soldiers employed in Civil employ	30	Th	
			31	F	

AUGUST, 1936

SEPTEMBER, 1936

Date.	Days of week.	General and Office	Date	Days of week	General and Office
1	S	Rent roll to Accountant General United Provinces, Allahabad	1	T	Rent roll to Accountant General United Provinces, Allahabad
2	S	Statement of non gazetted officers over 55 years of age or attaining that age	2	W	
3	M		3	Th	
4	T		4	F	
5	W		5	S	
6	Th		6	S	
7	F		7	M	
8	S		8	T	
9	S		9	W	
10	M		10	Th	
11	T		11	F	
12	W		12	S	
13	Th		13	S	
14	F		14	M	
15	S		15	T	
16	S		16	W	
17	M		17	Th	
18	T		18	F	
19	W		19	S	
20	Th		20	S	
21	F		21	M	
22	S		22	T	
23	S		23	W	
24	M		24	Th	
25	T		25	F	
26	W		26	S	
27	Th		27	S	
28	F		28	M	
29	S		29	T	
30	S		30	W	
31	M				

OCTOBER, 1936.

NOVEMBER, 1936.

Date	Days of week	General and Office	Date.	Days of week.	General and Office
1	Th	Rent roll to Accountant General, United Provinces, Allahabad.	1	S	Rent roll to Accountant General United Provinces, Allahabad.
2	F		2	M	
3	S		3	T	
4	S		4	W	
5	M		5	Th	
6	T		6	F	
7	W		7	S	
8	Th		8	S	} <i>Diwali.</i>
9	F		9	M	
10	S		10	T	
11	S		11	W	
12	M		12	Th	
13	T		13	F	
14	W		14	S	
15	Th		15	S	
16	F		16	M	
17	S		17	T	
18	S		18	W	
19	M		19	Th	
20	T		20	F	
21	W		21	S	
22	Th		22	S	
23	F	<i>Dasehra.</i>	23	M	
24	S	<i>Dasehra.</i>	24	T	
25	S		25	W	
26	M		26	Th	
27	T		27	F	
28	W		28	S	<i>Guru Nanak's birthday.</i>
29	Th		29	S	
30	F		30	M	
31	S	<i>Shab-i Barat.</i>			

THOMSON COLLEGE OF CIVIL ENGINEERING,

THOMSON COLLEGE ADVISORY COUNCIL

1. SRI JAGADISH L. THAKUR, M.A., M.Sc.,
 Chief Engineer, Government, Public Works
 Department, Government, Public
 Works Department, Public Works
 President
2. RAI BAHADUR CHIT JAGADISH L. THAKUR, Chief Engineer,
 Public
 Roads

COLLEGE STAFF

October, 1935

H J AMOORE I S E

Principal

CAPT J BARNETT, M E S ,

*Personal Assistant to Principal and Superintendent
College Office*

DEPARTMENTS

Civil Engineering

MAHABIR PRASAD B SC I S E Professor of Civil Engineering

W M G DAWSON I S E Professor of Civil Engineering

H T CUMMING, A M I E (IND) Assistant Professor of Survey and Drawing

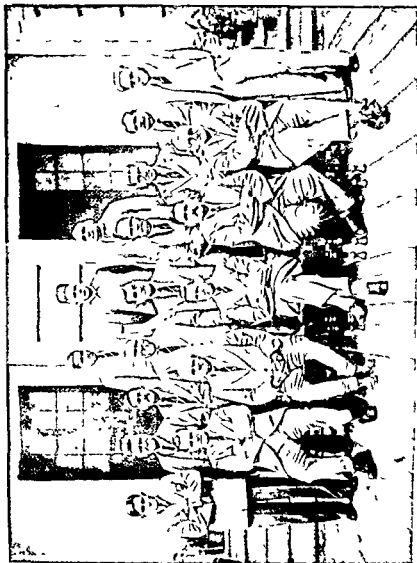
K L BHATTACHARYA M SC Lecturer in Chemistry
(All)

P L SHARMA A R I B A Lecturer in Drawing

S R SINGH B SC (Eng Lecturer in Surveying
Bristol)

Pure and Applied Mathematics

B D PURI M A (Cantab) Professor of Pure and
Applied MathematicsP CHAKRAVARTI M SC (All) Lecturer in Mathematics
M.A (All)



The Staff,
Session 1935-36

ANAND SARUP M A C (All) . Lecturer in Physics

Mechanical and Electrical Engineering

J CRAWFORD, A M I MECH E, Offg Assistant Professor of
Mechanical and Electrical
Engineering

M L MISRA A M I E (Ind) Lecturer in Electrical Engi-
neering

B L SHARMA, B SC Hons Lecturer in Mechanical Engi-
(Elect Engrg Bristol), A M
I E E neering

DIWAN SINGH . . Foreman Carpenter

ASA RAM . . Foreman Moulder

ABDUL RAHIM .. Foreman Mechanic

Overseer Class and Draftsman Class.

P C SEN GUPTA, B SC (All) Offg Head Master

PHUMMAN RAM Instructor

JIWAN LAL . . Instructor

RAGHUNANDAN LAL . Instructor

Office

MOHAN LAL BHARGAVA .. Head Clerk

HARDWARI LAL . . Accountant

Librarian

J. H. KELLY

GENERAL DESCRIPTION OF THE THOMASON COLLEGE

THE Thomason College is a provincial institution maintained and controlled by the Government of the United Provinces but students are admitted, under certain conditions, from the Punjab, Central Provinces, Central India, Rajputana and Burma, the Governments of these Provinces paying the cost of training their students. A few students are admitted annually from certain Indian States under special conditions. Every candidate for entrance is required to produce certain educational and other certificates before he is permitted to appear in the annual competitive entrance examination of his class. The competition is keen. Candidates are not admitted from the provinces of Bengal, Bombay or Madras, as these provinces have their own engineering colleges. Full details of the conditions of admission to the Thomason College appear in the circulars of the various classes. These circulars are obtainable from the College and are included in this calendar.

The Thomason College now admits successful and fully qualified candidates to the following classes

- (a) Civil Engineer Class
- (b) Overseer Class
- (c) Draftsman Class

The Course of Study in the College for each of these classes is given in the Course of Study and Syllabus pamphlet of the class. These pamphlets are obtainable, on payment, from the College Book Depôt and are included in this calendar. The Civil Engineer Class course is of three years' duration,

and candidates for it must not be under 17 or above 21 years of age on June 1 immediately preceding the competitive entrance examination which is held annually in June *This rule is very rigidly enforced* The Overseer Class course is of two years' duration and the age limits in this case are 16 and 21 years under the same conditions The Draftsman Class course is usually of three years' duration and there is no age limit the qualifying educational standard for the entrance examination of the Draftsman Class is much lower than for the other classes and the entrance examination standard also is lower

The Civil Engineer Class course approximates to the degree standard in engineering of a British university The Thomson College grants a diploma on the successful completion of the course The first year of the course is devoted mainly to pure mathematics and science the second year chiefly to more advanced pure and applied mathematics science, surveying and some civil mechanical and electrical engineering and the third year almost entirely to civil engineering (including designs) with the addition of more mechanical and electrical engineering and surveying (including astronomy) An important test of a student's practical ability takes place in the third year, in which, after the preliminary projects, which are set, corrected and criticized by internal examiners a two months' engineering project is set by an outside examiner The third year students go into camp for the first portion of this project period and each student works alone across country with his own instruments (theodolite, level and plane table), and his gang of men, returning to Roorkee when he has finished his work in the field to complete his report, designs, calculations, estimates and survey plates This test which carries a large number of marks effectually eliminates the pure theorist from the upper half of the class,

and brings to the fore the man of common sense, ability, character and initiative. The Overseer Class students also execute a small project in Roorkee to test their practical ability. Before the end of each session, in June, there is a final examination, in which every student must qualify in the various groups of subjects studied during the session should he wish to remain in the College. Mid sessional examinations also are held in February. The College session begins on October 16 and ends on July 15, being followed by a vacation of three months during the unhealthy monsoon period, when out door work would be impossible. At Christmas ten days' leave is given.

The College grants either an 'Honours' or an 'Ordinary' diploma to students who successfully complete the College course, according to their total of marks. A successful Civil Engineer Class student is usually posted as an unpaid apprentice to the Public Works Department for one year to learn practical methods of work and the control of labour. At the end of this year, appointments to the Engineering Services depend on vacancies.

In the Overseer Class there are a certain number of paid apprenticeships for those who pass highest and are of United Provinces domicile. The others are offered unpaid apprenticeships. At the end of the year of apprenticeship, appointments to the Subordinate Engineering Service of the United Provinces depend on vacancies.

An employment register is maintained for the benefit of any men who do not obtain employment or are out of employment.

✓ The probable current monthly expenses of a student are shown at end of the circular of each class. It will be seen that the expenses of a Civil Engineer Class Indian student

should not exceed Rs 100 0 0 per mensem while the College is open and of a European student Rs 136 0 0 per mensem. The e figures include a College fee of Rs 24 per mensem and charges for rent conservancy, furniture recreation servants and messing but a final examination fee of Rs 40 is also required before a student leaves the College. The expenses of an Overseer Class Indian student are estimated at Rs 45 per mensem including a College fee of Rs 6 per mensem. A number of scholarships are awarded in the Civil Engineer Class and Overseer Class.

The Thomason College main building is large and spacious. It has laboratories classrooms and model rooms for the various departments. The equipment of instruments and apparatus is complete and up to date. The College Workshops are also well fitted with machinery and apparatus. The College has its own Dairy Hospital Book Depot Meteorological Observatory and an electrical supply system giving current for electric lights fans and motors in all buildings. The drinking water is pumped direct from enclosed wells into overhead reservoirs while water for gardens and grounds is obtained from the Ganges Canal through a separate pipe system. All the pumps are operated electrically. The Civil Engineer Class and Overseer Class students and some of the Draftsman Class students live in Hostels grouped in the rear of the College. Each student of the former class has a furnished room and bathroom. The Civil Engineer Class Indian students have a club and the European students a mess. Most of the staff have detached bungalows with gardens. A plan of the College and a map of the estate appear at the end of this calendar. Many facilities for recreation are provided for the students. There are a number of tennis courts courts of squash racquets football and hockey ground a cricket ground and a large boat club on the

Ganges Canal with rowing and sculling boats The students are encouraged to take part in all games and sports in order to fit them for their profession and for their own benefit. Athletic Sports and a Regatta are held annually and all Civil Engineer Class students are now enrolled in the Indian Auxiliary Force or the University Training Corps for military training, while the Overseer Class students perform physical drill under a military instructor

HISTORY OF THE THOMASON COLLEGE

The Thomason College, the oldest engineering college in India owes its birth to the waters of Mother Ganges. Without the River Ganges there would have been no canal of that name and, without the canal, no college at Roorkee. The Ganges Canal soon reached maturity, but its offspring, the Thomason College, planned by men of wisdom and foresight, grew steadily from the smallest beginnings till it attained the proud position which it now holds as one of the leading educational institutions of the East with great traditions and a reputation second to none.

The establishment of an engineering college at Roorkee was suggested to the Honourable James Thomason, Lieut.-Governor of the North West Provinces about 1846 by Colonel Cantley of the Bengal Engineers, who had been Superintendent General of Canals since 1836 and was busily engaged in the scheme, first contemplated by Colonel Colvin of the same Corps for the employment of the waters of the Ganges for irrigation. While there is no doubt that the immediate requirements of the Ganges Canal in engineer officers and subordinates were chiefly responsible for the foundation of the Thomason College, it is probable that broader issues also influenced the minds of Mr Thomason and his advisers and that an important point was the necessity for some systematic training for Civil Engineers in India, or at least in Northern India. The Western Jumna Canals were commenced in 1817 and the Eastern Jumna Canal in 1822. In 1847 the

annual expenditure on establishment for these undertakings was Rs 1 04 000 and on annual repairs Rs 35 090. In Dehra Dun Rohilkhand and near Delhi works for drainage and irrigation were maintained requiring skilful superintendence. The roads from Jubbulpur to Mirzapur, the grand trunk roads from Calcutta to Delhi and from Agra to Bombay and the Land Revenue Settlement Survey had been completed. It was apparent that there existed a large demand for skill in every branch of Civil Engineering. To meet this demand there were officers of the Army, European non-commissioned officers and soldiers and Indians. To make these men efficient agents the well-educated Europeans lately arrived in the country required instruction in Indian languages and in the peculiarities of materials and construction in India. The European soldiers required scientific instruction and the Indians from their local experience and ability to bear exposure to the climate were likely to prove efficient instruments if they were well taught and inspired with a proper sense of responsibility.

As early as the year 1845 Lieutenant Baird Smith of the Bengal Engineers then Superintendent of the Eastern Jumna Canal began training young Indians at Saharanpur in Civil Engineering for the grade of Sub Assistant Executive Engineer and in 1846 twenty candidates were admitted to this class. In 1847, after the First Punjab War Lord Hardinge, the Governor General determined on the vigorous prosecution of the Ganges Canal scheme. This undertaking especially in the first few miles of its course was beset with great engineering difficulties. Evidently it would tax to the utmost the skill, industry and resources of the people and country. The science that was necessary to construct a work of this magnitude would also be kept constantly in exercise for its maintenance, improvement and extension. Immediate measures

were necessary to provide a constant supply of well trained and experienced Engineers. Out of this emergency, the Roorkee College arose, later to be known as the Thomason College. The circumstances which caused the selection of Roorkee as the site for the College were thus stated in the proposal made to the Governor General on September 23, 1847 —

The establishments now forming at Roorkee near the Solani Aqueduct on the Ganges Canal afford peculiar facilities for instructing Civil Engineers. There are large workshops and most important structures in course of formation. There are also a library and a model room. Above all a number of scientific and experienced officers are constantly assembled on the spot or occasionally resorting thither. These officers however all have the appropriate and engrossing duties to perform and cannot give time for that careful and systematic instruction which is necessary for the formation of an expert Civil Engineer. On these accounts the Lieutenant Governor would propose the establishment at Roorkee of an institution for the education of Civil Engineers which should be under the direction of the Local Government in the Education department.

The proposal obtained the immediate and cordial support of the Governor-General in India. On October 19 1847 Lieutenant R. MacLagan of the Engineers* was appointed Principal of the College and on November 25 of the same year a prospectus was issued the establishment being fixed at a Principal, a Headmaster in Architectural Drawing Master and two Indian Teachers. The prospectus provided for three departments in the College. The First Department was for candidates for appointment as Sub Assistant Civil Engineers. It was laid down that they must be under 22 years

* Father of Sir Edward MacLagan late Governor of the Punjab

of age, must be able to read and write English easily and must have a knowledge of Geometry, Algebra, Mensuration, Plane and Spherical Trigonometry, Conic Sections, and Mechanics. The number to be admitted was 8 annually. The Second Department was for European Non commissioned Officers and soldiers who had to pass an elementary test in Reading, Writing, simple Drawing and very easy Mathematics before admission. The number of admissions was limited to 10 annually. These soldiers were trained to become Overseers in the Public Works Department. The Third Department was for young Indians desiring free instruction in Surveying, Levelling and Drawing. These men were required to have some knowledge of Arithmetic and to be able to read and write Urdu. Admissions were limited to 16 annually and qualified men were given certificates on leaving the College. Annual examinations were held for all classes. It will be noticed that the lengths of the courses were not specified, but it is believed that the Second Department course lasted 6 months only.

When Lieutenant R. MacLagan was appointed Principal in October 1847, not only were there no students, but there was no College. The first students were admitted on January 1, 1848, by the transfer of a few young Indians, who were being instructed by Major W. E. Baker of the Bengal Engineers, then Director of the Ganges Canal. These men apparently joined the Third Department. By August 1848, ten non-commissioned officers and soldiers had joined the Second Department, which was then complete, but meanwhile, as no building was available, work was carried on in tents. A very small building, the forerunner of the present Thomson College, was built for use during the hot weather of 1848 and was demolished later, when better accommodation was provided in the new College buildings. This little building contained two classrooms (26' x 32'), a Principal's Office 20' x 23', a Hall of

the same size and four small verandah corner rooms (16 × 12) for the Headmaster Drawing Master Book Dépôt and Store, with verandahs on all sides. A plan of this miniature College—known then as the Roorkee College—hangs in the Thomason College corridor. The site of the building is unknown but presumably it was near the site of the existing College possibly where the Principal's residence now stands. Instructional work was interrupted in the winter of 1848-49 by the Second Punjab War when Lieutenant MacLagan and the military students were absent on service for about two months or as it was tersely put "Marched for the frontier".

The year 1848 was an important one in the history of Roorkee. In this year 12 years after the first line of the Ganges Canal levels had been taken Lord Hardinge then Governor General recommended the commencement of work on the Canal scheme with the utmost vigour and the Ganges Canal may be said to originate from that time. The Canal Foundry Workshops were also established at Roorkee by Major Allen of the Bengal Army in that year and students of the Roorkee College attended there for practical instruction. In 1850 the number of Military students admitted to the College was increased to 15 annually and on April 7 1851 there were 50 students of all classes. Forty-two men had already passed out.

The year 1851 really marks the birth of the Thomason College as it now is. At the end of the Second Punjab War the Roorkee College with its then existing establishment and accommodation was barely adequate for the instruction of the students and was utterly inadequate to meet the exigencies of the occasion. Mr Thomason at once grasped the situation and prepared a scheme for enlargement.

This scheme provided for —

- 1st—The admission of officers, both of the Royal and East India Company's armies, to study at Roorkee in a class called the Senior Department
- 2nd—The superintendence and improvement of the village schools around Roorkee as feeders for the Third or Indian Department of the College
- 3rd—The establishment, in connexion with the College, of a Dépôt for Mathematical and Scientific instruments and of a workshop for their repair and manufacture
- 4th—The formation of a Museum of Economic Geology
- 5th—The erection of an Observatory for instruction
- 6th—The maintenance of metal and stone printing presses with a book-binder's establishment and all the necessaries for the publication of scientific works with appropriate drawings and illustrations
- 7th—The enlargement of the College buildings and establishment to meet all these purposes
- 8th—The doubling of the number of students in the Second and Third Departments

The original cost of the College buildings, etc., was estimated at Rs 1,56,217 and the annual charge for the College at Rs 83,898

A valuable record of the origin of the Thomason College and the aims and objects for which it was established, is to be found in a pamphlet, dated October 3, 1851, drawn up by Mr Thomason, Lieutenant Governor of the North-West Provinces. The exact date of the commencement of the construction of the new College—afterwards called the Thomason College—is unknown, but it seems that the work must have

been started in 1852. The officer who designed the main building was Lieutenant Price of the 1st Fusiliers then employed on the Ganges Canal who later became Chief Engineer, Hyderabad. There is reason to believe that Lieutenant Price also supervised the work of construction *vide* Frontispiece, Volume III of Colonel Cautley's Report on the Ganges Canal. It is very remarkable that a junior Infantry Officer should have been capable of designing and building so large an edifice as the Thomson College and producing an example of Renaissance architecture which seems to be not unpleasing even to the eyes of professional architects who have visited Roorkee in modern times. The officers responsible for the selection and acquisition of the site for the Thomson College and its estate showed wonderful judgment and foresight. They acquired in time 365 acres of land including the high ground on which the College itself was built facing the north in which direction the main range of the Himalayas towers in snowy grandeur above the nearer hills and lesser ranges. The land was fertile the water supply ample and the locality healthy while within a mile or two some of the greatest engineering works in the world were in the process of construction. It is recorded that the construction of the College was nearing completion in 1854 and that all the original buildings including the main building were completed in January 1856, so that a period of about four years was required for the work. The front of the main building viewed from the north was as it is at the present day except that there was no clock but there were no rooms where the present Library and Convocation Hall exist—only covered passages—and the rear of the quadrangle was open except for a small model room and museum block in the centre. As time went on the College was enlarged. By 1873 the Library and Convocation Hall had been built and by 1896 the rear of the

College had been closed by providing rooms for Science Departments while still later a second storey was added over the south east corner to accommodate the Photo School of the College Press. Nevertheless it can be said that the Thomason College was completed as then required, in January, 1856, though the site had not the beautiful trees which now provide welcome shade around its lawns and gardens.

Until the year 1854 the institution at Roorkee continued to be known as the 'Roorkee College,' but in that year the Honourable Court of Directors instituted a scholarship to be called the Thomason Scholarship, in memory of Mr Thomason and the Governor General ordered the Roorkee College to be called the "Thomason College of Civil Engineering" in the following notification —

No 6

OUR GOVERNOR GENERAL OF INDIA
IN COUNCIL

PUBLIC DEPARTMENT

London February 8 1854

- 1 We entirely concur in the opinion you express that it becomes the Government of India to institute some enduring memorial of the eminent merits and services of Mr Thomason and we think that the object cannot be accomplished in a more appropriate manner than by connecting it with the

Letter, dated November 4, 1850 of 1853 Submitting for Court's sanction a proposal for the foundation of a scholarship or prize at the Roorkee College, in memory of the late Mr Thomason

College of Civil Engineering at Roorkee

- 2 We approve the proposal you have submitted to us and authorize you to carry it out in such a way as may seem to you most suitable. At the same time we are of the opinion that the opportunity should be taken of marking our sense of

Mr Thomason's public services and of connecting his memory with Roorkee College in a still more emphatic manner. It appears to us very fitting that an institution of such peculiar importance to India and of a character so entirely novel in that country should bear the name of its founder and it is accordingly our desire that *the College be henceforth designated the Thomason College of Civil Engineering at Roorkee*."

3 We direct that this change of name and the reasons for it be publicly notified in such form as you deem most suitable

We are, etc.,
(Sd) RUSSELL ELLICE,
J OLIPHANT
and other Directors

In 1856, when the Thomason College had been built, a Committee was appointed by the Lieut-Governor to inquire into the past working and present condition of the College and to prepare a scheme for its extension to meet the demands of the Services. The recommendations of this Committee, most of which were approved in November, 1857, were not put into force at that time owing to the disorganization caused by the Indian Mutiny, but the more important alterations were carried out during the next year or two. These were as follows —

1 A fixed date was introduced for admission to the Senior Department (Commissioned Officers) and the number for this department was fixed at 16

2 First Department —The non stipendiary students were now styled the *English Class* and their number fixed at 10. A general educational test was prescribed in addition to the mathematical test at the entrance examination. The stipendiary students were termed the *Native Class* and an entrance test similar to that for the English Class was exacted.

Students of the First and Senior departments were eligible for appointment as Probationary Assistant Engineers

3 Second Department — *Military Class* — The number of students was fixed at 30. The course however was only for one year against two in the other departments

Non Military Class — No alterations were proposed for this Class but Indian students were now admitted

4 Third Department — *vernacular* — Various alterations in the syllabus and the requirement of a knowledge of English were prescribed for this department

5 An evening class for Indian workmen in Drawing, Geometry and Estimating was started

6 A Professor of Surveying was added to the staff, who was made Curator of the Instrument Depot also a Professor of Practical Chemistry and Photography

7 A College Museum was started with models from England

8 An Observatory was sanctioned

9 A Gymnasium was sanctioned but was not provided till later

10 A soldiers garden and the grounds generally were laid out and improved

11 The Press was reorganized and enlarged

12 The young officers and non commissioned officers and privates of the Sappers stationed at Roorkee were required to attend the College as far as their duties would admit

Colonel R Macdonald R E the first Principal retired in 1860, being succeeded by Captain E C S Williams, R E, who in turn was succeeded by Major J G Medley, R E, in 1863. The latter held the post of Principal till 1870. For a few years there were no great changes but the College was

expanding steadily. In 1863 when the number of students had risen to 68 a Professor of Experimental Science was appointed. In 1864 the College was affiliated (nominally) to the Calcutta University. The course for the Senior and First Departments was extended to three years unless a higher certificate was gained in two years. Eight students were guaranteed appointments as Assistant Engineers and practically all officers from the Senior Department obtained employment. Second Department students still remained only one year in the College and passed into the Public Works Department, Military students as 1st Grade English Civilians as 1st or 2nd Grade and Indians as 3rd Grade. In 1866 a Mistry Class was formed and also an Officers Surveying Class for a 7 months course in Military Surveying Drawing and Field Engineering. In 1868 an Indian Military Class (3rd Department) joined the College for a 2 years course. The names of the various classes were altered in 1870 by which time there were 231 students. The Senior Department became the *Engineer Class* (Military and Civil) while the Second Department became the *Upper Subordinate Class* and the Third Department the *Lower Subordinate Class*. By 1870, the Staff had greatly increased and consisted of a Principal two Assistant Principals a Professor of Experimental Science and a Professor of Drawing. These officers were assisted by a staff of masters for the Upper Subordinate Class under a Head Master and another staff for the Lower Subordinate Class. The increase in the number of students and in the strength of the staff between the years 1863 and 1870 was remarkable. By 1870 the Thomason College had become a large and important institution but very few Indians of good education entered it indeed between 1847 and 1873 only 17 Indians passed out from the Engineer Class or its equivalent the remainder being Europeans.

Major A M Lang R E replaced Colonel J G Medley, R E as Principal in 1871 and in the following year the Upper Subordinate Class course—up to then lasting one year only—was extended to two years In 1873 the Central Instrument Depot located in the College was transferred to the Canal Foundry and Workshops and a new Class for instruction of men of the Guides Corps in Surveying and Drawing was started About the year 1873 it became apparent that at last the more highly educated Indians had begun to realize the advantages of the Engineer Class in which they could obtain an excellent education *gratis* with the chance of a provision for life in a well paid and honourable profession This is shown by the fact that between 1873 and 1875 sixteen Indians passed out of the Civil Engineer Class

The history of the College since its establishment may be said to be divided into four periods and the year 1875 marked the close of the first period The chief characteristic of this period was the pecuniary aid given by the Government to most students in the way of stipends It was an era of pioneering in an untrodden country and Government had to bear the cost of the journey But it was also a period of great industrial development and of great activity in the construction of railways, canals, roads and other aids to industrial enterprise The public mind was opening to the benefits of public works and to the advantages of Engineering as a profession The result was that in 1875 Government found it possible to restrict the financial help previously given to students and to limit the number of guaranteed appointments to the Public Service The years 1875 to 1896 may be termed the second period During these years, though the pecuniary aid given to students was to a large extent done away with, most of them paid practically nothing for their education The training however, was confined chiefly to Civil Engineering Surveying and allied

branches and technical or industrial classes did not exist. The years 1896 to 1920 may be called the third period when all students except soldiers, paid fees and the College was developed greatly as a Technical Institute much stress being laid on Industries and Science. From the year 1920 to modern times may be considered as the fourth period when the College reverted once more to the specialized training of Civil Engineers and subordinates relinquishing Industrial and Mechanical and Electrical classes which were found to interfere with the more advanced training in Civil Engineering necessitated by modern conditions and were unsatisfactory in a non Industrial centre such as Roorkee.

The Royal Indian Engineering College at Cooper's Hill in England which opened in 1871 and closed in 1906 had an unfortunate effect on the entry of students to the Engineer Class at Roorkee after 1876. While 55 admissions to this class were made in 1876 only twenty were made in 1878 but the effect of Cooper's Hill College decreased later when more Indians appeared as candidates for entry. An entrance examination fee of Rs. 20 was required for the first time in 1876. In 1878 Major A. M. Brandreth, R.E. succeeded Colonel A. M. Lang, R.E. as Principal. In 1881 the Guides Corps Class was thrown open to the whole Indian Army and was called the Native Military Survey Class. In this year also for the first time marks were allotted for physical fitness and for proficiency in athletics. From the commencement of 1882 the entire financial responsibility for the College was thrown on the Local Government. Under orders of the Secretary of State no Europeans except Royal Engineers were to be appointed as engineers in India except under his sanction, it being understood that Cooper's Hill College was to be the source whence they were to be recruited. Indians of pure Asiatic descent were to be given all vacancies in the Public

Photography Photo Mechanical Processes and Art Handicrafts. Students could take up one or more of these sections according to their capabilities. The affiliation to the Allahabad University, though nominally effected, was never actually completed and in time it died a natural death as did the affiliation to Calcutta University in 1864. It is evident that the development of the College into a Technical Institute was started with the greatest vigour under the control of the Education Department. The Thomason College became an educational institute under that Department and all important matters had to be referred to the Committee of Management, which became later the Advisory Council. In 1896, a clock was presented by H. E. Sir Bir Shumsher Jung, K. C. S. I., at a cost of Rs. 2,500 and placed on the College dome.

The next few years showed the progress of the College as a Technical Institute. The Technical and Scientific side was greatly strengthened, while the Civil Engineering side seems to have remained as before. In 1897 two Professors, two Instructors and a Demonstrator were appointed to the Staff, viz. a Professor of Mathematics (Mr. Tipple) and of Experimental Science (Mr. Sedgwick), an Instructor in Applied Science, a Technical Instructor and a Laboratory Demonstrator. A Chemical Laboratory was started. New Technical Workshops were sanctioned. In 1899 an Electrical Engineering Class was started. In 1901 the new Technical Workshops, equipped with the latest machinery run by electricity, were built at a cost of Rs. 33,000. The Applied Science Laboratories were fully equipped. A Physical and Mechanical Laboratory was provided. The College Press was enlarged and remodelled and an electrically operated water-supply system for the whole College was installed. Before the completion of all these alterations and additions which were necessary to carry out the details of the reorganization scheme of 1896, Colonel

J Chibbourn C I E I S C went on furlough pending retirement in 1901 and his duties as Principal were taken over by Captain E H de V Atkinson R E , who remained Principal from 1902 to 1915 when he left the College (as Lieut Colonel Atkinson, C I E R E) to proceed on active service during the Great War. A Council was created in 1901 to assist the Principal in regulating the courses of study and other matters which were recognized as outside the province of the Committee of Management. A sub committee of this Council now called the *Board of Studies*, still performs these duties, though the Council itself has ceased to exist. The enlargement of the Thomason College between the years 1896 and 1900 may be judged by the facts that the number of classes increased from 8 to 25, the number of students from 180 to 324 the fees from Rs 4 121 to Rs 16 784 and yet the yearly cost of the entire management fell from Rs 1 48 261 to Rs 1,32 064. These facts were pointed out by Sir A P MacDonnell, Lieutenant Governor, in a speech delivered at Roorkee on November 6 1900 when he added that it was the object of Government to develop the Thomason College into a Technical Institute for the North West Provinces and Oudh which should control, stimulate and inspire technical teaching of all kinds. Experience, however, showed later that advanced technical instruction was not easy at Roorkee and could not be given there except at the expense of higher civil engineering instruction. The Thomason College, with its 25 classes, was becoming very complicated, though such expansion may have been expedient under the industrial and technical conditions then obtaining.

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abolished. The session was for the first time divided into three terms and the examinations grouped together at the end of each term. A new time-table was introduced and the allotment of marks re arranged. The length of each attendance, which had so far been invariably 3 hours, was changed to 1½ hours except for certain subjects such as Laboratory work and Drawing. The arrangement of the staff was altered. Each branch of study was placed under a Professor with assistants who were responsible for the teaching of that branch throughout the College. A Dairy was started in connection with the College stores which had been founded by the staff and students. In July the College was visited by the Lieutenant Governor, Sir Digges LaTouche, and as a result of his inspection a number of much needed buildings were sanctioned. In the early part of 1903 most of these buildings were completed. They included a building for the stores and dairy, a bazar, a central power house, improvements to the quarters, new latrines, the completion of the system of drainage and a house for the Applied Science Instructor. A grant of Rs. 24,000 was sanctioned, to be spread over four years, for bringing the supply of surveying instruments in the College up to date. In 1904, further improvements in interior economy were made. The syllabuses for all the classes were revised and brought up to date. The list of text books in use was revised and recent and more approved methods of instruction in Geometry and Mechanics introduced. A start was made to equip a Mechanical Laboratory for the practical teaching of Mechanics. Instead of specified text books for the Entrance examination of the Civil Engineer Class, a brief Syllabus was prepared for each subject and published in the Circulars. A Survey Class for Indian Officers of the Imperial Service Troops was held for the first time. The Mechanical Apprentice Class, which was started in 1896, was placed on a

more practical basis, an entrance examination introduced, and the course altered to three years at College and two years as Indentured Apprentices in outside workshops. The rules for the Draft man and Computer Class were altered and an examination in Drawing was held for men who had passed the Lower Subordinate Class Entrance examination but failed to obtain vacancies. Mr P P Phillips, PH D, joined the staff as Instructor in Chemistry in 1904. The College Press was reorganized, the Typographic branch being reduced and the Lithographic branch developed. The terms of admission to the Industrial Apprentice Class were altered, the payment of scholarships in special cases being substituted for stipends. The College had indeed entered upon an era of strenuous reorganization and expansion.

On April 8, 1905 H E the Viceroy, Lord Curzon inspected the Thomason College and on March 7, 1906, the College was greatly honoured by a brief visit from Her Royal Highness the Princess of Wales (now Her Majesty Queen Mary), who afterwards presented portraits of H R H the Prince of Wales and herself to the College. The Lieutenant Governor—Sir J J D LaTouche—visited the College during 1905. A Professor of Surveying and Drawing and a Demonstrator in Chemistry were added to the staff in 1905 and Mr A M McLean joined the staff as an Instructor in Mechanical Engineering in 1906. In the year 1907, a large scheme for the further development of the College as a Technical Institute was sanctioned. The Lieutenant Governor at that time—Sir John Hewett—was greatly interested in industrial and technical education. An electric light, fan, and telephone system was installed in the College main building, the Workshops and the Principal's residence. New engines of ample power were laid down. A Technical Class was started and the Mechanical Apprentice Class enlarged. To

meet these increases additional hostel accommodation was built, the workshops doubled in size, new classrooms built, additional staff entertained a new water supply inaugurated and last, but not least new laboratories for the College sanctioned at a cost of Rs 94 000 In the following year (1908), the buildings sanctioned in the expansion scheme were practically finished and the new engines and water-works installed. An Automobile Driver Class was started and good progress was made at first in training drivers The Calcott-Reilly Memorial Fund from the late Cooper's Hill College was handed over to the College to be given for Applied Mechanics in the Civil Engineer Class Mr C J Veale joined the College Staff in 1908 as Professor of Surveying and Drawing The new accommodation for the Photo-Mechanical Department (the College Press) was completed in 1909 and in this year the late expansion of the Professorial staff necessitated a scheme to provide new and better staff bungalows A site in the vicinity of Malikpur village was acquired and the village removed to Khanjarpur Mr P P Phillips who was appointed on five years' contract, was taken into the Indian Educational Service In October, 1909, His Honour the Lieutenant-Governor, Sir John Hewett, visited the College and opened the new laboratories, additions to workshops and the electrical and power installations and a new double-storeyed hostel. A sub committee of the College Council was formed into a *Board of Studies* to advise on all matters connected with courses, examinations and time tables In 1910 the Technical Class was abolished and arrangements made to form a Department of Technology Major H B D Campbell, B E. (Assistant Military Principal), left the College in which he had served since 1897 and was replaced by Captain E W C Sandes, B E, who joined as Professor of Civil Engineering on the abolition of the post of Assistant Military Principal.

Mr H P Jordan also joined as Professor of Mechanical Engineering. An elaborate educational plant of cotton machinery was installed in the College workshops with an expert instructor in charge of the Cotton Class. Five houses were built in 1910 and 1911 for College professors on the Malikpur estate though not taken into use till late in 1912. A Department of Technology was formed on revised lines to consist of (1) a Higher Division, (2) a Lower Division (Mechanical Apprentice Class) (3) an Automobile Driver Class. Marks throughout the College, were rearranged and few papers were valued at less than 100 marks. Special grants were assigned for survey equipment and Workshops equipment.

A large Textile Department building was built in the Workshops enclosure in 1911 and 1912 all the cotton machinery was erected in it. This is the building—now outside the Workshops enclosure—which was converted later for use by the Overseer Class and staff as classrooms and offices and known as the Overseer Class Annexe. The Automobile Driver Class was transferred to Lucknow. This transfer marked the beginning of the gradual diminution of all Technical and Industrial classes in the Thomason College and its reversion from a Technical Institute into a purely civil engineering institution as it is today. In 1913 nine Anglo Indian students joined the Textile (Cotton Spinning and Weaving) Class but the Class did not seem to be a success. After a few years admissions to it ceased at Roorkee and later the cotton machinery was transferred elsewhere. In 1914 admissions to the higher division of the Department of Technology at Roorkee ceased and the lower division (the Mechanical Apprentice Class) was transferred to Lucknow so that both these classes soon ceased to exist in the College. These changes marked a further step in the reversion of the College

to a civil engineering institution, though in 1914, a Mechanical and Electrical Engineer Class was started and was maintained for a time. In 1913 the Public Services Commission under Lord Islington, visited the College. There were no other events of much importance in the College in the years 1913 and 1914. The institution developed gradually in different ways but in a calm and peaceful atmosphere rudely broken in August 1914 by the world wide catastrophe of the declaration of War.

When the Great War commenced the College was in vacation but in October 1914, when it re-opened great enthusiasm and patriotism were shown by the staff and students who subscribed Rs 2 500 towards the Imperial Relief Fund and followed daily the progress of the war on maps hung in the College corridor. Mr B M Mukerjee, Professor of Physics volunteered in 1914 for service in the X Ray section of the General Hospital and left for active service in the Western theatre, not returning until 1920. Captain E W C Sandes R E proceeded on active service to Mesopotamia in March 1915. The Principal, Lieut Col E H deV Atkinson, C I E R E, proceeded to England in July, 1915, where he was appointed C R E of a Division and rose to be Chief Engineer of the 4th Army on the Western Front before the end of the war with the rank of Major General and many decorations. Mr J F Tipple officiated as Principal till October, 1916 in his absence. Mr H P Jordan Professor of Mechanical Engineering, and Mr A M McLean, Instructor in the same Department, obtained commissions in the Indian Army Reserve of Officers and left for military service in May, 1915 and August, 1915 respectively. Mr Jordan returning invalided in October, 1915, and Mr (now Major) McLean M C, in 1920 after service in Mesopotamia and staff employment in India. Mr E S Griffith, an Instructor, obtained an I A R O commission in May, 1917 and

Mr G Lacey, who joined the College as Professor of Civil Engineering in November, 1915, also obtained a commission in 1917 and both left the College. Many European students, who had passed out of the College, received commissions, and the names of those students killed in the War appear on a brass memorial tablet in the College. It is evident that the War took a heavy toll of the College Staff and instruction became increasingly difficult. Funds were also scarce, so that any large expansions had to be postponed till better times. Nevertheless the instructional work continued. The Public Works Department assisted the College by recommending the appointment as Principal of Mr W Gunnell Wood, C S I, late Chief Engineer, Buildings and Roads Branch, United Provinces, and this appointment was made in October, 1916. Sir James Meston, Lieut Governor, visited the College in February, 1916.

The Public Works Reorganization Committee visited the Thomson College in 1917 and in July of that year His Honour the Lieut Governor of the United Provinces, Sir James Meston, presided at the annual Convocation. The Indian Defence Force came into existence, replacing the Mussoorie Volunteer Rifles, and all British subjects in the College were enrolled in the new formation. Admissions to the Textile Class ceased in 1918, but the class was not transferred finally to Cawnpore till January, 1920. The declaration of the Armistice was duly celebrated in November, 1918 and the College settled down to consolidate its position in the difficult times which succeeded the War, when political unrest in certain districts and lack of funds for new schemes rendered the task of Government no easy one. Mr E F Tipple, Professor of Mathematics, vacated his post in April, 1919, after 22 years' service at the College during which he twice officiated as Principal. In February, 1920, Major E W C S. —

D S O M C R L , re joined the College Staff from leave after the War as a Professor of Civil Engineering and subsequently officiated as Principal for several months during the absence on leave of Mr W G Wood, C S I During 1920 and 1921 the College suffered heavily through the deaths of Mr T W Sedgwick, Professor of Electrical Engineering and Physics who had served on the College Staff for 23 years and Sub Conductor G E Lansley, Personal Assistant to the Principal, on March 22 1920, and October 6, 1921 respectively Mr W L Stampe I S E , was appointed as a second Professor of Civil Engineering in November, 1920 and Mr J M Salusbury Trelawny as a third Professor in October, 1921 There were many changes in the superior staff at this time, due to the altered conditions after the close of the War and the retirement of officers, who had carried on the work ably during the War

It is not proposed, in this history, to deal with changes of staff other than professorial staff, except in unique cases and as regards professors merely to mention the times of their first appointments and dates on which they vacated their posts finally Officiating appointments and those owing to leave vacancies are too numerous and would make the history unwieldy Reference to the Annual Report at the end of the Calendar of any year will show in detail the changes in the staff during that year For easy reference a list of Principals follows this History in the Calendar and also a list of Convocation Presidents, i e , officers who presided at the Annual Convocations and Prize-givings A further list of very distinguished visitors is added Many other senior officials have also visited and continue to visit the College, the Annual Report of each year shows their names, and, needless to say, the College welcomes such indications of their interest in it

A complete Reorganization Scheme for the Staff of the Thomason College dated July 12 1919 was drawn up in that year by the Committee of Management of the College to suit the new requirements of Government under the Reforms Scheme and the new policy laid down for the future of the College and it was duly submitted to the Secretary of State. The scheme was necessitated by the proposal to close down certain classes in the College as mentioned hereafter. The Committee of Management proposed certain modifications of the original scheme in May 1920 and final sanction to the amended scheme was accorded by the Secretary of State on January 29 1922. After 1920 admissions to the Upper Subordinate Lower Subordinate Industrial Apprentice and Mechanical and Electrical Engineer Classes ceased. It had been decided finally that the training of Mechanical and Electrical specialist students and Industrial and Technical students was not suited to Roorkee and this decision marked the end of the scheme to develop the Thomason College as a Technical Institute. The cessation of recruitment to the Upper and Lower Subordinate Classes and the consequent disappearance of the last students of these classes in July 1922 was brought about by changes in the organization of the Public Works Department under which many sub-divisions were to be in the charge of Assistant Engineers (Provincial Service) instead of Upper Subordinates. This scheme made it advisable to train sub-overseers to a standard higher than the Lower Subordinate Class recruits for the new Subordinate Engineering Service. Hence when the Upper Subordinate and Lower Subordinate Classes were to be abolished in the College a scheme was prepared to replace them by a new Overseer Class of intermediate standard. The new Overseer Class was approved and the first students were admitted in October 1922 for a

3 years' course, 40 vacancies being offered annually for competition. This 3 years' course was later reduced to 2 years. The former Lower Subordinate Class Staff was transferred to the Overseer Class but later the instruction was supervised and assisted also by the Lecturers of the Civil Engineer Class. It was originally intended that the Overseer Class should be located at Roorkee only until buildings were ready at Lucknow to accommodate it. The last students of the Mechanical and Electrical Engineer Class and the Industrial Apprentice Class passed out of the College in July 1923 but a class for Draftsmen was retained and still exists. A batch of 20 Military students was admitted to the College in January, 1922, as a special case, to meet the requirements of the Military Engineer Services (old M W S) for a short course of training approximating to that of the abolished Upper Subordinate Class with due regard to the shorter duration. This batch left the College in July, 1923. A second batch of ten Military students only was admitted in October, 1922 and passed out in July, 1924 and with that batch the class ceased to exist in the Thomason College and all College students have since then been civilians.

In the year 1921, the College Committee of Management was replaced by an *Advisory Council*, constituted under G O No 1573/XV—312, dated July 10, 1920. The last meeting of the Committee of Management (45th) was held on July 9, 1920 and the first meeting of the Advisory Council on February 17, 1921. The Council was formed with 10 members as compared with 7 members constituting the Committee, but the number of members in the Council has since increased. The status of the Thomason College was improved owing to the Government of India offering to the Civil Engineer Class 10 or 9 vacancies in alternate years, in the Indian Service of Engineers, as *guaranteed appointments*.

This step, by which employment in the Imperial Service was again thrown open to highly qualified students, was a return to the practice in vogue up to 1894, when students could pass into that Service. The constitution of the Indian Defence Force was changed in 1921 to the Auxiliary Force (India) and the College detachment (Europeans) became a part of the Mussoorie Battalion, being organized as a Machine Gun Section. As increased accommodation for professors was required, one thatched bungalow, almost opposite the Royal Engineers' Mess, was replaced by a pukka building in 1920 and in 1921 the construction of a pukka bungalow was commenced opposite the Royal Engineers' Mess and another further east. In October, 1921, Mr W G Wood, C S I, vacated the post of Principal and was succeeded by Major E W C Sandes, D S O, M C R E.

His Excellency the Governor of the United Provinces, Sir Harcourt Butler, K C S I, C I E, presided at the College Convocation and Prize-giving in July, 1922. In this year a Committee was appointed by Government to inspect the College Press with a view to possible economies through the transfer of the control of the Press to the Superintendent of the Government Press, Allahabad (then Mr Abel). Though the Committee recommended the transfer, the Advisory Council was averse to it and Government accepted the opinion of the Council. The two new bungalows for professors were completed in 1922 and funds were given for the transfer of the Textile (Cotton) Machinery to Cawnpore and the conversion of the Textile Building into an Annexe for the Overseer Class instruction. The benefits of the sanctioned Reorganization Scheme were felt in this year. All members of the instructional staff were allowed rent free quarters from October 1922 and salaries were improved. Mr H P Jordan, Professor of Mechanical Engineering then on leave, was trans-

ferred to the Poona Engineering College in October, 1922. Mr Dhawan, Mr Raja Ram, Mr B D Puri, and Mr. Shiv Narayan joined the Staff as Professors of Civil Engineering (Railways) Civil Engineering (Sanitary), Mathematics and Electrical Engineering and Physics respectively, also Mr Chuckerbutty as Assistant Professor of Surveying and Drawing But Mr Shiv Narayan and Mr Chuckerbutty were transferred elsewhere after one session and the posts remained vacant and Mr Dhawan also left in October, 1923

His Excellency Sir William Marris, K C S I , K C I E , who succeeded Sir Harcourt Butler as Governor, presided at the Convocation in July 1923 This occasion was unique in that the Governor of the Punjab His Excellency Sir Edward Maclagan K C S I C I E was also present and distributed the prizes at the request of Sir William Marris Sir Edward Maclagan had been invited in view of his connexion with the College through his father, Colonel R Maclagan, R E , who was the first Principal A portrait of Colonel Maclagan, presented by His Excellency Sir Edward Maclagan in commemoration of his visit, hangs in the Convocation Hall Mr C J Veale, Professor of Surveying and Drawing, officiated as Principal for a period of six months in 1923 (including the College vacation), in the absence of Major Sandes In November, 1923, sanction was given to the formation of one Platoon of the 3rd (Allahabad) Battalion of the University Training Corps (Indian Territorial Force), at Roorkee, thus enabling the Indian students to undergo military training for the first time Applications for enrolment far exceeded the vacancies and there was great keenness Unfortunately the strength of one Platoon did not allow of the actual enrolment of more than one half of the Civil Engineer Class students, but the remainder received military drill instruction The

Overseer Class students continued to receive instruction in physical drill

Major General Sir Edwin Atkinson K B E C B C M G , C I E , Master General of Supply and a former Principal of the College presided at the Convocation in July 1924 During this year the grant for repairs was increased and much necessary and overdue work was carried out including re-roofing the College bazaar buildings and the completion of new out buildings and the re-roofing of servants quarters Dr P P Phillips on return from leave officiated as Principal from October 1923 till the return from leave of Major E W C Sandes in October 1924 A Special Committee was assembled by Government at Roorkee in December 1924 to investigate certain matters connected with the syllabuses courses of study and staff of the College running out of the introduction of the Reorganization Scheme of 1919 A very comprehensive report was submitted by this committee in 1925 which was subsequently dealt with item by item by the Advisory Council whose recommendations caused Government to sanction several useful alterations and innovations in the College courses Mr A C Verrieres C I E Chief Engineer Buildings and Roads Branch Public Works Department United Provinces an old student of the College presided at the Convocation in July 1925 this being the first instance of a past student performing this duty An extension of the Indian Engineer Class Club was put in hand and also several internal alterations in the College itself and in hostels and re-roofing of certain lungalows with jack arches A very fine steel model of a plate girder bridge span on a large scale was presented to the College by Messrs Bann and Co Howrah and installed in one of the College model rooms which have been developed into useful instructional departments Mr R A Bradshaw Smith I S T joined the Staff

as Professor of Civil Engineering (Irrigation), in February, 1925, Mr L E Dawson having acted temporarily since Mr W L Stampe vacated the post in October, 1924

The President at the College Convocation in July, 1926, was His Excellency Sir Malcolm Hailey, K C S I , C I E , Governor of the Punjab He was invited to preside because the Punjab had of late years, been so largely represented in the College Indeed, the Punjab candidates for the Civil Engineer Class had become as numerous as those from the United Provinces the Punjab paying the expenses of the training of every such candidate who gained admission, though admissions were limited The Board of Studies, in 1926, formulated proposals for the improvement of the Overseer Class course and instruction A grant was given by Government for the purchase of additional plant for the College Workshops, which lacked modern generating machinery Two vestibules, one classroom and three offices were re roofed in the main College building and also certain servants quarters and small out houses Another lecturer's bungalow was re roofed with jack arches

The Convocation President in July was Mr (now Sir) B D'O Darley, C I E , I S E , Chief Engineer Sarda Canal, and Secretary to Government, United Provinces Public Works Department, Irrigation Branch Mr Sahg Ram, I S E , an old student, joined the Staff in June, 1927, as Professor of Civil Engineering The College was grieved to learn of the death of a distinguished past student, Sir Ganga Ram During the summer a new flagstaff was erected in front of the College

This brief history having now been written up to the end of the College Session of 1926-27,—a period of 80 years since the foundation of the Thomason College in 1847—it may be

well to continue it year by year in the form of a *Sessional Diary* including the *preceding* vacation, i.e., by yearly periods from July 15 to July 15, and this system will henceforth be adopted. It should be realized that all facts and events cannot be recorded in the History but only those of importance.

Session 1927-28 — A great event in the Session 1927-28 was the visit of His Excellency the Viceroy, Baron Irwin of Kirby Underdale G M S I, G M L E, to the Thomason College on April 11, 1928. His Excellency and Staff de-trained in the early morning motored round the College estate and then visited the Workshops and inspected the College and later inspected also the College Press before departing by motor for Dehra Dun. His Excellency inspected a Guard of Honour of the College students and was photographed with the staff students and visitors. He expressed himself much gratified with all he saw and presented a photograph to the Principal an enlargement of which appears in the College Convocation hall. The honour of this visit was greatly appreciated by the College as a whole and particularly since no Viceroy had visited the institution since Lord Curzon came in 1905. His Excellency the Viceroy was pleased to enter the following remarks in the College Visitors' Book —

It gave me great pleasure to visit the Thomason College to day and to see with my own eyes the institution which has turned out so many famous engineers. The equipment was obviously of a high standard and the curriculum appeared to me very comprehensive and wisely drawn for its purpose. I was greatly impressed by all I saw and by the many evidences of the way in which Colonel Sandes and his Staff are carrying on the work. I am very grateful to him for giving me so interesting and instructive a morning and to him as to the College Staff and its students. I can wish nothing better

than that the College may maintain the high standard and tradition which is associated with its name

IN 1919

The Principal, Lt Col E W C Sandes D S O , M C , R E , was placed on deputation for one month in November, 1927 with the Rangoon University to advise about the Engineering College at Rangoon and he proceeded to Burma for this purpose. The Civil Engineer Class students passing out of the Thomason College in July, 1928, were the first batch for many years to whom the Government of India guaranteed no appointments in the Indian Service of Engineers, such guarantee having been withdrawn in the case of students entering in October, 1925, and thereafter. The entrance examination to the Civil Engineer Class in June, 1928, was also the first examination conducted under a revised syllabus of a higher standard than formerly with the approval of Government and the Advisory Council and stipulating also a higher qualifying standard than before for permission to sit for that examination viz, the Intermediate or equivalent standard in place of the Matriculation or equivalent. It was anticipated that this raising of standards would cause a marked decrease in the number of candidates, but such is the reputation of the Thomason College and the prospects offered to students, that this was not the case. Indeed 203 candidates who were qualified under the new rules entered for the examination in June 1928, in competition for the usual 30 ordinary annual vacancies in the Civil Engineer Class. In the Overseer Class 236 candidates entered for 40 vacancies. During the summer of 1928 most of the College staff benefited by the recent completion by the Public Works Department of temporary lines on the College estate for the supply of electric current from Bahadurabad. Consumers made their own arrangements for temporary internal wiring and fittings, pending

permanent arrangements, but were able to draw current, on payment, from the Public Works Department through the sub-station erected in 1927 on the College estate. The Students' Mess and Club similarly benefited. The first P W D Power Installation at Bahadarabad was completed in 1913 and was arranged to supply alternating current to the Canal Headworks at Bhimgoda only, the alternators being driven by turbines operated by canal water. In 1924—26 however, the power station was greatly enlarged, alternative plant was installed and the electric supply given to Hardwar and adjacent places. A line was laid also to supply the whole of Roorkee, including the College, part of whose electric current now comes indirectly from its parent, the River Ganges. The new water-supply system for the College estate, however, could not be installed as funds were not available. A very large steel model road bridge of Baltimore Truss type with overhead bracing, was received during 1927 from Messrs Burn and Co., Howrah, and placed in the bridge model room during the Session 1927-28, complete with framed diagrams and calculations. Most of the cost was generously met by the firm. The liquidation of the College Stores was completed. The staff and students of the College learnt with the deepest regret on June 17, 1928, that His Excellency the Governor of the United Provinces Sir Alexander Muddiman Kt., K C S I C I E, had died on that day. His Excellency had undertaken to preside at the Annual Convocation in July, 1928. In consequence of this tragic event Mr A H Mackenzie, C I E, Director of Public Instruction United Provinces, presided at the Convocation and distributed the prizes and certificates. This function brought to a close a notable Session—the first since 1905 in which the College had been honoured by a visit from a Viceroy. A silver challenge

cup, to be awarded annually to the best student in Games and Sports, was donated to the College by the Principal, Lieut.-Colonel E W C Sandes and was presented to the first winner at the Convocation, together with a miniature cup. Another silver challenge cup was donated by Mr B D. Puri, Professor of Mathematics, for Squash Racquets Doubles, and a third cup by Mr J Barnett, Personal Assistant to the Principal, for the Overseer Class in the Athletic Sports. These cups were also presented at the Convocation. A fourth silver cup, for an annual cross country race, was promised by Mr R A Bradshaw Smith, Professor of Civil Engineering, on leaving the College, when reverting to his Department in 1928.

Session 1928-29 —The Hon'ble Raja Bahadur Kushalpal Singh, the United Provinces Minister for Education, presided at the Annual Convocation in July, 1929. Dr P P Phillips officiated as Principal from May, 1929 until the end of the session in place of Colonel Sandes who was granted leave. During the year funds were provided by Government for the installation of electric light in all the College residential quarters, a benefit which was appreciated by all concerned. The separate department of Electrical Engineering and Physics was abolished and the instruction in Electrical Engineering transferred to the Mechanical and Electrical section at the Workshops. Physics was combined with the work of the Chemistry Department, which henceforth will be known as the Department of Applied Science. Lt J S Gurney took charge of the post of Head Master, Overseer Class, from the beginning of the session.

Session 1929-30 —Mr P H. Tillard, I S E., Chief Engineer, P W D, B & R Branch, U. P., presided at the Annual Convocation in July, 1930. Colonel Sandes proceeded

on leave preparatory to retirement with effect from March 7 1930 and Mr P P Phillips was appointed to succeed him as officiating Principal in the first instance

Session 1930 31 —Mr A H Mackenzie, C I E Director of Public Instruction United Provinces visited Roorkee from April 8 to 10 and inspected the College Mr W Roche C I E, I S E Chief Engineer P W D, Irrigation Branch U P presided at the Annual Convocation The European students mess of the Civil Engineer Class had to be closed owing to paucity of members, after having been in existence for 34 years Up to the last its members had a very fine record both in work and games

Session 1931 32 —The Retrenchment Committee, appointed by Government for the Thomason College presided over by the Hon ble Mr J P Srivastava M Sc A M S T, M L C Minister for Education United Provinces met in Roorkee from November 12 to 14 1931 His Highness the Maharaja of Jaipur visited the College in January, 1932, and Major General Addison on July 6 1932

The Photo Mechanical and Litho Department and Book Dépôt ceased to be departments of the College with effect from March 1 1932 The course of instruction in photography was abolished and the last award of medals in photography was made at the convocation on July 14 1932

Dr P P Phillips Ph D F I C I E S Principal was superannuated with effect from March 22 1932 after serving the Thomason College for 28 years and Mr Raja Ram Professor of Civil Engineering succeeded him as officiating Principal from that date

Mr Gerald Lacey, I S E, Professor of Civil Engineering, proceeded on leave with effect from April 21 1932 and reverted to the Irrigation Branch United Provinces from

October 17 1932 and Mr M L Garga Assistant Research Officer, Irrigation Branch, officiated as Professor of Civil Engineering up to July 15 1932 in his place

Professor Gerald Lacey offered an annual prize of Rs 25 to be awarded to a Civil Engineer Class student for the best performances at the meetings of the Thomasonian Society during each session

Mr C J Veale, F R G S , F R A S , Professor of Surveying and Drawing retired on pension with effect from March 8 1932

Dr M A Hamid, PH D M Sc , joined as Temporary Professor of Applied Science on October 22 1931

Lieut Colonel C A Bird, D S O , R E , presided at the annual convocation

Session 1932 33 —Many of the changes ordered by the Government in accordance with the report of the Retrenchment Committee which met in Roorkee from November 12 to 14, 1931 became operative with the start of this session

The departments in the Civil Engineering Course were reduced from 5 to 3 The Department of Applied Science was abolished, Physics being added to the Department of Pure and Applied Mathematics and Chemistry Geology and Mineralogy to the Department of Civil Engineering The Department of Survey and Drawing was amalgamated with the Department of Civil Engineering and its professorship reduced to an assistant professorship

The changes in the staff were —

- (i) Abolition of the post of Professor of Applied Science
- (ii) Abolition of one of the posts of Professor of Civil Engineering, thereby reducing the number from 3 to 2

- (iii) Abolition of two posts of Instructors of the Overseer Class reducing the number from 5 to 2
- (iv) Abolition of one of the two posts of Lecturers in Mechanical Engineering
- (v) Abolition of the post of Superintendent of the College Office and combining this post to that of the Personal Assistant to the Principal

Further from the start of this session the Principal in addition to his ordinary duties became head of the Department of Civil Engineering and was called upon to lecture

Mr H J Amoore I S E became Principal from October 6 1932

Mr H T Cumming was appointed Assistant Professor of Survey and Drawing from the start of the session and Mr J Crawford ceased to be a lecturer in Mechanical Engineering becoming Headmaster of the Overseer Class from the same date relieving Mr H T Cumming

Rai Bahadur Devi Datta M I S E was appointed Professor of Civil Engineering joining his appointment in February 1933 thereby relieving Mr M L Garga who reverted to his substantive appointment in the Irrigation Branch of the P W D United Provinces

Raja Jwala Prasad retired Chief Engineer Irrigation Branch P W D U P presided at the Annual Convocation

Session 1933-34—Major A M McLean Assistant Professor of Mechanical and Electrical Engineering who joined the staff of this College in October 1906 left in March 1934 on leave preparatory to retirement Mr J Crawford Head Master Overseer Class officiated in his place in addition to his own duties

The Honble Sir J P Srivastava Kt M Sc M I C Minister for Education United Provinces presided at the Annual Convocation

Session 1934-35 —

Mr H J Amore Principal proceeded on leave out of India from March 15 1935 Professor Mahabir Prasad who joined the College as Professor of Civil Engineering on the forenoon of December 7 1934 officiated as Principal from March 15 1935

Mr J Crawford continues to officiate as Assistant Professor Mechanical and Electrical Engineer Class

Mr P C Sen Gupta took over charge as officiating Head Master overseer class on February 11 1935

Captain J Barnett proceeded on privilege leave from May 13 1935 for 2 months 25 days

Mr P L Sharma lecturer in Drawing proceeded on leave out of India for 6 months 21 days in continuation of College vacations of 1934 from October 22 1934 but had to return earlier and resumed charge on December 8 1934

Mr P S Bhatnagar officiated as lecturer in Drawing in his place from October 22 1934 to December 8 1935

A special committee appointed by the Government to report on the revision of syllabus and course of study Civil Engineer class held its sitting in the College on January 6 and 7 1935

Sir Sita Ram President of the Legislative Council paid a visit to the College on April 26 1935

LIST OF PRINCIPALS

Colonel R MacLagan R E	1847—1852
Major Oldfield R E (Offg)	1852—1856
Colonel R MacLagan R E	1856—1860
Captain C E S Williams R E	1860—1862
Colonel J G Medley R E	1863—1871
Colonel A M Lang R E	1871—1877
Colonel A M Brandreth R E	1877—1891
Colonel I D M Brown V C I S C	1891—1892
Lt Col J Chbborn C I E I S C	1892—1902
Lt Col E H deV Atkinson C I E R E	1902—1915
W G Wood Esq C S I	1916—1921
Lt Col E W C Sandes D S O M C R E	1921—1931
Dr P P Phillips Ph D I I C I E S	1931 1932
H J Amore Esq I S E	1932—(in office)

NOTE.—The ranks shown are those held on vacating the appointment. Officers and Principals are omitted from the list but many names appear in the Calendar of 1911 and the names of Mr L F Tople Mr C J Veale and Mr Raja Ram may be added for recent years.

LIST OF CONVOCAIIION PRESIDENTS

FROM 1890

- 1890 The Hon ble Sir Auckland Colvin, K C M G , C I E ,
Lieut Governor N W P
- 1891 Mr T H Wickes Chief Engineer P W D N -W P
- 1892 The Hon ble Sir Auckland Colvin K C M G , C I E ,
Lieut Governor N W P
- 1893 Mr A H Harington, I C S , Commissioner, Meerut
Division
- 1894 Mr J G H Glass C I E , Chief Engineer, P W D ,
N W P
- 1895 }
to { Principal, Thomason College (Lt Col J Chibborn,
1897. { I S C)
- 1898 Offg Principal Thomason College (Lt H B D
Campbell R E)
- 1899 }
to { Principal Thomason College (Lt Col J Chibborn,
1901 { I S C)
- 1902 His Honour Sir J J D LaTouche K C S I ,
Lieut Governor, U P
- 1903 Principal, Thomason College (Major E H deV
Atkinson R E)
- 1904 Lt Colonel A E Sandbach, R E 1st Sappers and
Miners, Roorkee
- 1905 Lt Colonel S V Thornton, R A , O C Station,
Roorkee



Sir WILLIAM L STAMPE Kt CIE
Secretary to Government U P P W D Irrigation Branch
and Chief Engineer Irrigation Development
(Convocation President Session 1934-35)



Sir WILLIAM L STAMPE Kt CIE
Secretary to Government U P, P W D Irrigation Branch
and Chief Engineer Irrigation Development
(Convocation President Session 1934-35)

- 1906 to 1909 } Principal Thomason College (Major E H deV. Atkinson, R E)
- 1910 Mr C E V Goument, Chief Engineer, P W D , U P
- 1911 to 1915 } Principal Thomason College (Lieut Colonel E H deV Atkinson C I E , R E)
- 1916 Mr W Gunnell Wood C S I , Chief Engineer, P W D U P
- 1917 His Honour Sir James Meston K C S I , Lieut - Governor U P
- 1918 Mr F C Rose M I C E , Secretary to Government of India P W D
- 1919 Mr T R J Ward C I E M V O Inspector General of Irrigation in India
- 1920 Colonel Sir S D A Crookshank, K C M G C B , C I E D S O M V O , Secretary to Government of India P W D
- 1921 Mr St J Gebbie C I L Inspector General of Irrigation in India
- 1922 His Excellency Sir Harcourt Butler K C S I C I E Governor U P
- 1923 His Excellency Sir William Marris K C S I K C I E Governor U P
- 1924 Major General Sir E H deV Atkinson K B E , C B , C M G C I E Master General of Supply
- 1925 Mr A C Verrières, C I E Chief Engineer P W D , U P
- 1926 His Excellency Sir Malcolm Hailey K C S I C I E , Governor, Punjab

- 1927 Mr B D O Darley C I E , Chief Engineer, Sarda Canal U P
- 1928 Mr A H Mackenzie C I E Director of Public Instruction U P
- 1929 The Hon ble Raja Bahadur Kushalpal Singh, M A , LL B Minister for Education U P
- 1930 Mr P H Tillard Chief Engineer P W D U P
- 1931 Mr W Roche C I E I S E Chief Engineer, P W D Irrigation Branch Western Canals U P
- 1932 Lieut Colonel C A Bird D S O R E O C Station Roorkee
- 1933 Raja Jwala Prasad Retired Chief Engineer, P W D Irrigation Branch U P
- 1934 The Hon ble Sir J P Srivastava Kt M Sc , M L C Minister for Education, U P
- 1935 Sir William Stampe Kt C I E I S E Chief Engineer and Secretary to Government, U P , P W D I B

FROM 1890

*(Of ranks included in Articles 1 to 30 only of the Warrant
of Precedence 1922)*

- 1890 The Hon ble Sir Auckland Colvin K C M G C I E
Lieut Governor N W P
- 1892 The Hon ble Sir Auckland Colvin K C M G C I E
Lieut Governor N W P
- 1895 His Honour Sir A P MacDonnell K C S I Lieut -
Governor N W P
Lieut General Sir W K Liles K C B Command
ing the Forces in Bengal
- 1900 His Honour Sir A P MacDonnell K C S I Lieut
Governor N W P
- 1901 The Bishop of Lucknow
- 1902 His Honour Sir J J D LaTouche K C S I Lieut
Governor U P
Major General W T Shone C B D S O D G M W
Major General Beresford Lovett C B D G M W
- 1903 Sir A T Arundel K C S I I C S Member of the
Viceroy's Council
- 1905 His Excellency Lord Curzon of Kedleston P C
G M S I G M I E Viceroy and Governor
General of India (April 8)
His Honour Sir J J D LaTouche K C S I Lieut
Governor U P
- 1906 Her Royal Highness the Princess of Wales (March 7)
- 1913 Lord Islington P C G C M G D S O Chairman
Royal Commission on the Public Services in
India

1916. His Honour Sir James Meston, K.C S.I , Lieut -Governor, U P
1917. His Honour Sir James Meston, K C S I , Lieut -Governor, U P
 General Sir Charles Munro, G C B., G C.M G.,
 G C S I , Commander-in-Chief in India
 Lieut -General Sir George Kirkpatrick, K C B ,
 K C S I , Chief of Staff in India
- 1918 Lieut -General Sir H D Keary, K C B , D S O ,
 G O C , Meerut Division
- 1919 Mr T R J Ward, C I E , M V O , Inspector General of Irrigation in India
 General Sir Charles Munro, G C B , G C M G ,
 G C S I , Commander-in-Chief in India
- 1920 Lieut General Sir Havelock Hudson K C B , C I E ,
 G O C in C Eastern Command
- 1921 General Sir Claude Jacob, K C B , K C M G , Chief of the General Staff in India
 Major-General Sir Edwin Atkinson, K B E , C B ,
 C M G , C I E , Master General of Supply, India
 Mr E St J Gebbie, C I E Inspector-General of Irrigation, India
 Mr B N Sarma, Revenue and Public Works Member, Government of India
- 1922 His Excellency Sir Harcourt Butler, K C S I , C I E , Governor, U P
 Field Marshall Sir William Robertson, G C B ,
 G C M G , K C V O , D S O
 The Hon'ble Mr. C Y Chintamani, Minister for Education and Industries, U P

- 1923 His Excellency Sir William Marris, K C S I ,
K C I E Governor U P
His Excellency Sir Edward Maclagan, K C S I ,
K C I E , Governor Punjab
Major General Sir Edwin Atkinson, K B E , C B ,
C M G , C I E Master General of Supply,
India
The Hon ble Raja Parmanand Minister for Education,
U P
- 1925 The Hon ble Rai Rajeshwar Bah, O B E , Minister for
Education, U P
Major General R N Harvey C B , C M G , D S O ,
Engineer in Chief Army Head Quarters, India
- 1926 His Excellency Sir Malcolm Hailey K C S I C I E ,
Governor Punjab
The Hon ble Sardar Jogendra Singh Minister for Agri-
culture Punjab
- 1928 His Excellency Baron Irwin of Kirby Underdale,
G M S I G M I E Viceroy and Governor
General of India (April 11)
- 1929 The Hon ble Raja Bahadur Kushalpal Singh, M A ,
LL B Minister for Education, U P
- 1931 The Hon ble Mr J P Srivastava M Sc , Minister
for Education, U P
- 1932 H H the Maharaja of Jaipur
Major General Addison Engineer in Chief Military
Engineering Service in India
- 1933 Major General J E S Brind Deputy Chief of the
General Staff Army Head Quarters
- 1935 Sir Sitaram Kt President Legislative Council

List of distinguished passed students of the Thomason College

1851	C C Anderson Esq
1856	Lieutenant General H E Whish
1860	Lieutenant General W A Elles
1861	Lieutenant Colonel W H Mackesy
1863	General D A Jackson
1864	W C Wright Esq
1865	H L Monk Esq
1866	Lieutenant Colonel A C Bigg Wither
1868	Lieutenant Colonel J F Miller
1869	C G Palmer Esq
1870	J S Slater Esq
1871	E W P Foster Esq
1871	F R Bagley Esq
1872	Sir W Willcocks K C M G
1872	G M R Field Esq
1873	Sir W F Garstin
1873	Rai Bahadur Sir Ganga Ram C I E , M V O
1876	W MacDonald Esq
1876	W B Gwyther Esq
1877	J T Farrant, Esq
1878	C S R Palmer Esq
1878	W E T Bennet, Esq , C S I
1878	G M Harriot, Esq , C I E
1879	C E V Goument Esq , C S I
1881	F E Gwyther Esq
1881	R I Purves Esq
1882	G T Anthony Esq
1882	J M Taylor, Esq , C I E
1883	F O Oertel, Esq
1883	C V D Pratt, Esq
1885	A J Wadley, Esq

1886	Rai Bahadur Lala Rala Ram	C I E , 1 S O
1886	C H Wollaston	Esq
1888	Sir J Eaglesome	K C M G
1889	H W M Ives	Esq C I E
1889	F T Bates	Esq
1890	F W Allum	Esq C B E
1891	J N Taylor	Esq C I E O B E
1891	C B Mellor	Esq
1892	W C W Muller	Esq O B E
1893	A C Vernières	Esq C I E
1893	V Stanton	Esq
1894	C E Rushton	Esq
1895	R V Simons	Esq O B E
1895	Rai Bahadur Lala Bishun Swarup	
1898	Sir J B G Smith	C I F
1898	H Dale Green	Esq
1900	Raj Jwala Prasad	
1901	E A Glass	Esq
1902	E B Robey	Esq
1902	C W M Collins	Esq



*The rules in this Circular are liable to revision without notice
in view of possible changes in the Course of Study,
orders of Government, etc.*

[C I R C U L A R.]

**THOMASON COLLEGE OF CIVIL ENGINEERING,
ROORKEE.**

These rules apply to admissions in 1936 and till further notice

CIVIL ENGINEER CLASS.

(British and Indian candidates)

1 Candidates for admission to this class through the entrance examination must be Indians as defined below * Candidates whose parents or guardians are domiciled in Bengal, Madras and Bombay Presidencies are, however, not eligible for admission without the previous sanction of the Local Government Candidates must not be under 17 or above 21 years of age on June 1 immediately preceding the entrance examination in which they wish to appear

Only such private students from Provinces or States outside the United Provinces will be admitted to the Civil Engineer

*A 'Native of India' means any person domiciled in British India or within the territories of Indian Princes tributary to or in alliance with His Majesty and born of parents habitually resident in India and not established

Class of the College, who previously apply through the Government of the Province or State in which they reside for permission to appear in the entrance examination and provided that the Government or State concerned agrees, in the event of such students gaining a place in the examination which would entitle them to admission to pay a contribution towards the cost of their training based on the actuals of the preceding financial year. The only exceptions to this rule will be where the United Provinces Government agree in special cases to waive this contribution or the students themselves agree to pay it.

The Punjab Government are prepared to pay for about seven students from the Punjab to be admitted each year.

The age of a candidate will be taken from the original University records and for candidates who have not appeared for a University examination from College, or failing a College, from School records. No alterations in the records will be recognized except in the case of purely clerical errors. Application for examination must be accompanied by a true copy of University College or School registers, as the case may be, signed by the Registrar, Principal or Head Master and under no circumstances will any alteration be accepted to the advantage of the candidate.

All Europeans before admission must be properly protected by inoculation against enteric fever to the satisfaction of the Medical Officer in charge of the College. If not protected they must be inoculated on arrival at the College.

2. No European or Anglo-Indian will be allowed to enter the College if married, or to continue in the College if he marries before completing his course.

3. The College session commences on October 16. Applications for admission should *reach* the Principal, *complete*

in all respects, not later than April 15, nor before February 1, preceding The entrance examination will be held *in the first week of June or thereabouts* All applications should be accompanied by a statement of—

Date of birth of the candidate

The school or schools at which he has been educated

The profession situation relationship and residence of his father or guardian

One of the examination centres where he wishes to be examined (*vide* paragraph 9)

Forms of application may be obtained on request from the Principal

Samples of forms are shown in the appendices

N.B —No notice will be taken of applications which are not complete in every respect nor will any correspondence be entered into concerning them

4 Every candidate will be required to produce testimonials (which will not be returned) of good moral conduct, signed by the instructor under whom he has been educated or of some other superior under whom he may have been employed or brought up and these testimonials should have reference especially to his conduct during the two years immediately preceding his application for admission

5 A medical certificate must be furnished in the form as shown in the appendices, no other form will be accepted

6 An examination fee of Rs 20 must be forwarded with the candidate's application until this fee has been received by the Principal the candidate's application will not be registered In no circumstances will this fee be refunded to the candidate

7 The minimum qualifying test for admission to the entrance examination in the case of candidates from non European institutions is the Intermediate Examination of the Board of High School and Intermediate Education, United Provinces or the Intermediate Examination of any University in British India established by law, or in the

case of candidates from European Schools the Cambridge School Certificate with credit in additional Mathematics and a pass in either Chemistry or Physics, or the London University Matriculation Certificate which covers the subjects required for the entrance examination or such other qualifications as may be accepted by Government as equivalent thereto. Those candidates who have appeared for any of the examinations noted as the qualifying tests before the date of the College entrance examination but the results of which have not been published before the last date for submission of their applications to the Principal are allowed to sit for the College entrance examination. Such candidates must however, furnish with their application forms a certificate signed by the Head of their school or College stating that they have so appeared. Their names will be excluded from the list of successful candidates till the results of the qualifying tests are known.

8 The entrance examination is competitive and those who stand highest on the list of passed candidates (only to the number of available vacancies, which is for the present fixed at 30) will be selected for admission to the College. The Local Government has power to relax in very special cases the rule regarding the number of admissions. Any candidate who after being duly notified fails to join the College on the day fixed for the reopening of the session or, who before that date fails to obtain from the College authorities definite permission to join on some later date will forfeit his right to a admission.

No replies will be given to any telegrams or letters enquiring the results of the entrance examination. A copy of the printed results will be sent to each candidate when published.

9 The following is the list of the four subjects for the entrance examination. They are the same for both English and Indian candidates. The examination will be held by means of papers at the following centres only, *viz*, Roorkee, Allahabad, Lucknow, Agra, Naini Tal, Mussoorie,* Lahore, Rangoon and Nagpur. Candidates from the United Provinces will be allowed to appear at any centre of their choice in the United Provinces, while those residing outside the United Provinces will appear at centres, if such exist, within their province, or, failing that, at the centre nearest to their province.

SUBJECT No 1 LANGUAGES (250)

(a) English Composition (100)

(2 hours)

Each candidate will write a short essay on a given subject. The subject will not be one requiring deep knowledge or thought, but the test will indicate whether the candidate has the power of expressing his ideas in good English. Quality and not quantity is required and one answer book only should be used. Long quotations should be avoided. Quotations if introduced should be brief and have a distinct bearing upon the subject chosen. Marks will be deducted if these instructions are not strictly followed. Marks will also be deducted for unnecessary or faulty repetition, bad handwriting and errors in spelling. Careless work and much crossing out will be penalised as indicated in para 8 of the instructions printed on the cover of the examination book.

*The fixing of Mussoorie as a centre is conditional on seven candidates being forthcoming.

(b) *Precis Writing* (100).

(1 hour)

(i) *Précis*—A simple printed passage or passages will be set before the candidate and he will be expected to give in as few words as possible—a definite number is usually fixed *which must not be exceeded*—the leading ideas expressed in the printed paragraphs. No marks will be allotted to any candidate who quotes, *verbatim*, any of the sentences given in the printed passages.

(ii) *Paraphrasing*—Each candidate will be required to explain simply and briefly in his own way the meaning of the examples set. The precautions given under *précis* writing apply also to paraphrasing.

(c) *Hindustani* (50).

(3 hours)

Translation of extracts, in the Persian or Hindi character, from an easy Hindustani book, and of easy English sentences into colloquial Hindustani, and grammatical questions. Full marks will not be given to candidates unable to write the Persian or Hindi character, but the Hunterian system of transliteration may be adopted.

SUBJECT No 2 *MATHEMATICS (500).

(a) *Arithmetic and Mensuration* (80).

(3 hours)

(i) *Arithmetic*—Candidates will be expected to be familiar with all the general arithmetical principles and able to solve

any arithmetical problem Special value will be attached to the correct use of decimals and approximate methods in calculation (40 per cent marks)

(ii) *Mensuration* —General principles of measurement of lengths areas and volumes Determination of lengths of chords and arcs of a circle Areas of plane rectilineal figures segments and sectors of a circle cones cylinders and zones of spheres Volumes of parallelopipeds prisms pyramids cones cylinders frusta of cones and segments of spheres Special value will be attached to abridged methods of calculation (60 per cent marks)

(b) Algebra (80)

(3 hours)

Fundamental laws and definitions methods of addition subtraction multiplication and division Factors remainder theorem and elementary properties of integral algebraical expressions Highest common factor and lowest common multiple Elementary properties of fractions simple quadratic and simultaneous equations elementary theory of equations and elementary elimination Simple graphical solutions Extension of index law to fractional and negative indices Elementary properties of surd and imaginary expressions Involution and evolution Elementary propositions in ratio proportion and variation Elementary progressions and systems of numeration Permutations and combinations Elementary properties of logarithms Proof of the binomial theorem for a positive integral exponent and the use of the binomial theorem and exponential theorem for any index Elementary theory of convergent and divergent series Elementary partial fractions Graphical representation of simple functions

(b) *Precis Writing* (100).

(1 hour)

(i) *Precis* —A simple printed passage or passages will be set before the candidate and he will be expected to give in as few words as possible—a definite number is usually fixed *which must not be exceeded*—the leading ideas expressed in the printed paragraphs. No marks will be allotted to any candidate who quotes, *verbatim*, any of the sentences given in the printed passages.

(ii) *Paraphrasing* —Each candidate will be required to explain simply and briefly in his own way the meaning of the examples set. The precautions given under *précis* writing apply also to paraphrasing.

(c) *Hindustani* (50).

(3 hours)

Translation of extracts, in the Persian or Hindi character, from an easy Hindustani book, and of easy English sentences into colloquial Hindustani, and grammatical questions. Full marks will not be given to candidates unable to write the Persian or Hindi character, but the Hunterian system of transliteration may be adopted.

SUBJECT No 2 *MATHEMATICS (500)

(a) *Arithmetic and Mensuration* (80)

(3 hours)

(i) *Arithmetic* —Candidates will be expected to be familiar with all the general arithmetical principles and able to solve

*No books of any kind are allowed in the Examination halls. Logarithmic tables, if required, will be supplied by the officer conducting the examination. They should not be employed to avoid ordinary abridged arithmetical calculations.

any arithmetical problem Special value will be attached to the correct use of decimals and approximate methods in calculation (40 per cent marks)

(ii) *Mensuration*—General principles of measurement of lengths areas and volumes Determination of lengths of chords and arcs of a circle Areas of plane rectilineal figures segments and sectors of a circle cones cylinders and zones of spheres Volumes of parallelopipeds prisms pyramids cones cylinders frusta of cones and segments of spheres Special value will be attached to abridged methods of calculation (60 per cent marks)

(b) Algebra (80)

(3 hours)

Fundamental laws and definitions methods of addition subtraction multiplication and division Factors remainder theorem and elementary properties of integral algebraical expressions Highest common factor and lowest common multiple Elementary properties of fractions simple quadratic and simultaneous equations elementary theory of equations and elementary elimination Simple graphical solutions Extension of index law to fractional and negative indices Elementary properties of surd and imaginary expressions Involution and evolution Elementary propositions in ratio proportion and variation Elementary progressions and systems of numeration Permutations and combinations Elementary properties of logarithms Proof of the binomial theorem for a positive integral exponent and the use of the binomial theorem and exponential theorem for any index Elementary theory of convergent and divergent series Elementary partial fractions Graphical representation of simple functions

(c) Geometry (80).*(3 hours)*

Candidates will be expected to be familiar with the subject matter of Euclid Books I—IV VI and XI, and to be able to give proofs of the propositions. Candidates will also be expected to solve simple riders and to apply the propositions practically in the solution of easy graphical problems requiring geometrical drawing.

Books recommended: Hall and Stevens' School Geometry or any other book of approximately the same standard.

(d) Trigonometry (80)*(3 hours)*

Methods of measuring angles. Trigonometrical ratios and their values in special elementary cases. General properties of the ratios and identical relations between them. Formulæ for ratios of multiple and submultiple angles. Elementary relations between ratios and circular measure. Elementary properties of triangles. Use of logarithms and trigonometrical tables. Solution of triangles, heights, and distances. Elementary properties of quadrilaterals and regular polygons. Elementary inverse notation. Solution of equations. De Moivre's theorem.

(e) Plane Co-ordinate Geometry (80)*(3 hours)*

Elementary Co-ordinate geometry of the straight line and the circle (both in Cartesian and polar co-ordinates), including also the elementary properties of the parabola and the ellipse (in Cartesian co-ordinates only).

(f) Mechanics (100)

(3 hours)

Definitions of velocity, acceleration, relative velocity, angular velocity, etc. Measurement of such quantities when uniform or variable, and their graphical representation by means of curves. Motion under constant acceleration. Law of impact.

Laws of motion and derivation of dynamical unit of force. Simple propositions and problems on work, energy, etc. Fundamental and derived units. Parallelogram law for the composition of velocities. Acceleration and forces. Resultant of concurrent forces. Triangle of forces. Polygon of forces and funicular polygon. Moments and elementary propositions connected therewith. Resultant of parallel forces, couples and their fundamental properties. Reduction of a set of coplanar forces and conditions for equilibrium. Determination of centres of gravity in simple cases. Elementary machines and application of principle of work. Friction and its laws. Motion of projectiles neglecting air resistance. Circular motion, normal and tangential accelerations of a point moving along a curve. Properties of hodograph. Rate of description of areas under central force. Simple harmonic motion and time of oscillation of a simple pendulum. Potential energy and conservation of energy in elementary cases. Elementary moments of inertia.

SUBJECT No 3 (200)

(a) Physics (100).

(3 hours)

General—Simple physical measurements, mass and weight, density and specific gravity of solids, liquids and gases. Barometry.

Heat —Heat and temperature Thermometry and calorimetry, expansion and contraction with variations of temperature, changes of state fusion, evaporation, boiling point, vapour pressure, latent heat, condition, convection, radiation and mechanical equivalent of heat

Sound —The production and propagation of sound, nature of wave motion, amplitude, wave length, frequency, pitch, reflection of sound, resonance and determination of velocity

Light —Propagation, reflection and refraction, critical angles, mirrors, lenses, spectrum, simple telescope, microscope, spectroscope and photometer

Magnetism —Properties of magnets, induction, magnetic field, lines of force, the law of magnetic force and magnetic moments

Electricity—Conductors and insulators, electrification by friction and induction, influence machines, distribution of electrical charge on conductors, attraction, repulsion, potential, electrical capacity, primary cells, properties of the electric current, i, e , chemical, magnetic and heating effects, currents and resistance measurements, Ohm's law, series and parallel connections, shunts

No practical examination is prescribed, but all candidates are expected to have previously undergone an elementary course of practical work in a laboratory

(b) Chemistry (100).

(3 hours)

General properties of matter, simple and compound substances, laws of chemical combination acids, bases and salts,

metals and non metals combustion, oxidation and reduction Atomic and molecular weights, chemical equivalents, the atomic theory symbols formulae simple chemical equations, Avogadro's rule Dulong and Petit's law, Boyle's law Charles's law vapour density, diffusion and an elementary knowledge of solution dissociation and electrolysis The preparation general properties and principal compounds of hydrogen oxygen nitrogen, the halogens carbon, sulphur, phosphorus and silicon

No practical examination is prescribed, but all candidates are expected to have previously undergone an elementary course of practical work in a laboratory

SUBJECT No 4 DRAWING* (200).

(a) Geometrical Drawing (100).

(3 hours)

The whole of practical plane Geometry including all classes of scales, also plain block letter printing and writing The standard will be slightly higher than that of the High School Examination of the Board of High School and Intermediate Education, United Provinces Candidates will be asked to answer in ink about six or more questions on a quarter-sheet of drawing paper

(b) Free hand Drawing (100).

(2 hours)

A line diagram of a conventional kind or of a group of flowers or other objects will be given to the Candidate who

* Particular attention is called to this subject in which many candidates fail to qualify

will be expected to enlarge or reduce it to a given scale. No shading will be required. All work to be done by the unaided hand, no rulers etc. being allowed.

10. To pass the examination a candidate must obtain 50 per cent. of the 200 marks for English Composition and Precis Writing, 50 per cent. of the 500 marks for the Mathematics Group, 50 per cent. of the 200 marks for the Drawing Group and 50 per cent. of the 1,150 marks, which is the total aggregate. Further, marks which are less than 25 per cent. of the total obtainable in any paper are not counted and up to 10 per cent. of the marks in each paper will be deducted for slovenly work.

11. Sixteen scholarships of Rs. 50 a month are sanctioned for this class. Of these scholarships six will be awarded to first-year students, five to second-year students and five to third-year students.

These scholarships are awarded to first-year students on the results of the entrance examination and to second and third year students on the results of the first and second year's work and examinations, and are tenable for the *nine months of the College session*. All the scholarships are reserved for candidates of the United Provinces.

12. A College tuition fee of Rs. 24 per mensem will be paid during the session by each student of the Class irrespective of his domicile.

13. An Engineer class mess will be maintained and will cater for both vegetarians and non-vegetarians. All students are advised to join it but may make their own arrangements for separate messing.

14 Students are encouraged to take up military training by joining either the Indian Auxiliary Force or the University Training Corps. In the case of those students who do not elect for military training a course of Physical Drill will be compulsory.

15 It is desirable that every student should be able to swim before joining the College.

16 Each student should on joining the College be provided with a good set of drawing instruments and necessary class books for his own use. Class books are obtainable at the College Book Depot.

17 Quarters are provided for all students of the Civil Engineer Class in hostels near the College, a student being given a room to himself. The charges for rent and conservancy are Rs 5 12 per mensem. The hostels have been electrified the charges for current being Rs 2 per light per month and Rs 4 per fan per month. Students have to provide their own fans.

18 A limited number of sets of furniture as detailed below, are available for issue to students in order of seniority for which a monthly rental of Rs 2 8 is charged —

- 1 Bed cot with mosquito frames and mattress
- 1 Armless chair
- 1 Easy chair
- 1 Table (large) with book shelf
- 1 Small table
- 1 Towel rack
- 1 Chest of drawers
- 1 Bath tub
- 1 Commode

Students should arrange to bring their own mosquito nets and durries

19 Every candidate before he can be allowed to join the College must satisfy the Principal that he has sufficient means to defray his expenses during his course at Roorkee. A monthly allowance of Rs 136 should suffice for ordinary expenses of English students and Rs 100 for Indians

Any student failing to pay his College dues,* or to make sufficient progress in study will be suspended or ultimately removed from the College. The parent or guardian of any student so suspended or removed shall be held responsible for the payment of any debts whatsoever which may have been contracted while the student was in the College. Although every precaution is taken to prevent students from running into debt the College authorities are in no way to be considered responsible for such debt

20 The College year usually commences on October 16 and close on July 15. Candidates admitted to the College on the results of the Entrance Examination held in June will be informed on what date to join the College in the following October

21 Students in the Civil Engineer Class are trained for the Indian Engineering Services and the Civil Engineering profession generally. Many have gained employment outside India

NOTE—*The word College "dues" includes

(i) College fees

articles purchased

from recreation stores

(vi) All dues in connexion with Engineer Class Club

(vii) All dues of College dairy, College shoe maker, College shop keeper, College tailor, College sweet seller, and College stores

22 The Civil Engineering Course extends over three years. In the third year in June the final examination is held, when those students who have completed their course of study and have qualified will receive Diplomas.

A fee of Rs 40 is payable in the third year in April by each student, who intends to appear for this examination. If a student, having paid the fee, does not eventually appear for the examination, the fee will not be refunded.

23 The marks each student has to obtain to qualify for a return to the College upon completion of his 1st and 2nd year, and to obtain the College Diploma in Civil Engineering, awarded upon completion of his 3rd year are as follows:—

- (A) To return to the College at the end of the first year, the students are required to obtain 33 per cent. of the marks allotted to each Group, and 50 per cent. of the total marks.
- (B) To return to the College at the end of the second year, the students are required to obtain 33 per cent. of the marks allotted to each Group, in that year, (i.e. in the second year); and 50 per cent. of the total marks for the two years, i.e. of the full marks for the second year together with the reduced marks of the first year.
- (C) To pass out of the College at the end of the third year, the students are required to obtain 33 per cent. of the marks allotted to each Group, in that year (i.e. the third year), and 50 per cent. of the total marks for the three years, i.e. of the full marks for the third year together

with the reduced marks for the first and second years

- (D) The Ordinary Diploma is awarded to students who qualify as above but obtain less than 66 per cent of the total marks

The Honours Diploma is awarded to students who qualify as above and obtain 66 per cent or more of the total marks

A student who fails to qualify as above will neither be allowed to return to the College at the end of his 1st or 2nd year nor will he be awarded the Diploma in Civil Engineering, as the case may be. Should his failure, however, be due to prolonged absence through sickness or other circumstances beyond his control, such special cases will be considered and decided upon their merits

24 No student will be eligible for any College academic prizes unless he completes his course concurrently with the students who entered the College in the same year

25 Arrangements for giving practical training to Engineer students of the United Provinces upon completion of their course at the College will be made as far as possible in the U P P W D, Irrigation and Buildings and Roads branches. During the period of such practical training no allowances of any kind are now sanctioned

26 The list of the text books etc., used in the Civil Engineer classes of the College is given on pages 87, 88 and 89. The prices quoted are approximate

27. Drawing instruments, drawing boards, T-squares, etc , are procurable in the Bazaar, every student must provide himself with these at his own cost

28 Any student, who is expelled from the College for misconduct, will not be allowed to appear in any examination conducted by the College

29 Students will not be permitted to appear for any external examinations during their College course

30 Students will be tested in Riding before the completion of their College course

31 Full particulars of the Course of Study in this Class are contained in a pamphlet which can be obtained from the Government Photo-Litho Press Book Dépôt, Roorkee, at annas 15 a copy including postage This Dépôt is in the College Building

32 Each student will be required to purchase a copy of the Standing Orders of this College which is on sale in the Government Photo Litho-Press Book Depot, Roorkee, at annas 13 a copy, including postage, and ignorance of the rules therein contained will not be accepted as an excuse for breaking them

ROORKEE

July 31 1935

H J AMOORE I S E

Principal, Thomason College

APPENDICES.

Forms required to accompany a candidate's application for admission to the Thomason College, Roorkee, are shown below —

(1) STATEMENT SHOWING AGE, EDUCATION, ETC., OF CANDIDATE

Name	Date of birth	Province of domicile of the father, and if father not living, of guardian, where he must have definitely settled and resided for a period of three years, vide footnote on page 67	School or schools at	Name, profession situation residence of father or	Centre selected in case	Remarks
1	2	3	4	5	6	7

I am willing to be vaccinated on admission

(Place and date)

(Signature.)

(2) Educational certificate *

(3) Moral certificate

(4) Medical certificate in the form shown further.

(5) A certificate of the recorded date of birth

(6) Declaration as Statutory Native of India in case of other than pure Indians

*Copies properly certified by a Government gazetted officer only will be accepted

APPENDICES.

FORM OF MEDICAL CERTIFICATE

I certify that I have carefully examined———; that his eyesight is of the standard prescribed,† that he is fairly robust, and his constitution is sound, and that he has no disease, or bodily or mental infirmity, unfitting him now, or likely to unfit him in the future, for active outdoor service in the Public Works Department.

N B—The above certificate must be signed, within a month before date of submission, by a Commissioned Medical Officer, or by a Medical Officer

† The standard prescribed is as follows —

pro
not
other

2 Myopic astigmatism does not disqualify a candidate, provided the lens, or the combined spherical and cylindrical lenses required to correct the error of refraction does not exceed 3.5D, the acuteness of vision in one eye, when corrected being equal to $\frac{5}{6}$ and in the other $\frac{5}{6}$ together with normal range of accommodation with the correcting glasses, there being no evidence of progressive disease in the choroid or retina

3 A candidate having total hypermetropia not exceeding 4D is not disqualified, provided the sight in one eye (when under the influence of atropine) equals $\frac{5}{6}$ and in the other eye equals $\frac{5}{6}$ with +4D glasses or any lower power

4 Hypermetropic astigmatism does not disqualify, provided the lens, or combined lenses required to cover the error of refraction, do not exceed 4D, and that the sight of one eye equals $\frac{5}{6}$ and the other $\frac{5}{6}$ with or without such lens or lenses

5 A candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$. In such a case the better eye must be emmetropic. Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules, may exclude a candidate

6 A candidate is disqualified if he is unable to distinguish the principal colours (achromatopsia)

7 Paralysis of one or more of the exterior muscles of the eye-ball disqualifies a candidate for the service

APPENDICES.

Memorandum of Expenses of Students of the Civil Engineer Class.

THE following information is published for the guidance of parents and guardians, and for their assistance in determining the probable expenses of a course of instruction at the College. Economical management is aided as far as possible by the College authorities.

It must be clearly understood that students cannot be permitted to remain in the College if their dues* of any kind are not paid promptly on demand. The probable expenses of a student while at the College are shown under three heads, viz, the initial expenses at the beginning of each yearly term and the monthly current expenses and the final examination expenses.

The current monthly expenses for European students amount to approximately Rs 136, *see details*. The expenses for servants and miscellaneous are beyond the control of the College staff. For Indians the monthly charges amount to approximately Rs 100. The charges except for servants and miscellaneous expenses and for mess, in case of Indians, must be paid before the 21st of the month to which they relate and any student in arrears on the first of each month will lose all marks for any examination that may occur between this date and that on which he clears his

NOTE—*The word College "dues" includes

(i) College fees

' articles purchased

(vi) All dues in connexion with Engineer Class Club

(vii) All dues of College dairy, College shoe maker, College shop keeper, College tailor, College sweet seller and College stores

APPENDICES.

account Guardians are advised to send the above amounts direct to the Principal, and, if convenient, the whole remittance intended for the student can thus be sent, and the balance will at once be made over to him

Initial Expenses.

N.B.—List and prices are liable to alteration Prices shown are all approximate

Details	Price	Remarks
	Rs a p	
Box of Drawing Instruments		} Prices too variable to be given
T Square, 36"		
Set squares, 45° and 60°		
Brushes and colours		
Two drawing boards (24"×36") and (24"×18")		
Workshop tool set		
One ten inch slide rule		
<i>Books—</i>		
1ST YEAR CIVIL ENGINEER CLASS		
<i>Civil Engineering Department</i>		
(Including Surveying Drawing and Chemistry)		
Morley's Theory of Structures	9 6 0	
Roorkee Treatise Buildings Materials	2 4 0	
Ditto Building Construction	2 0 0	
Ditto Masonry	2 4 0	
Ditto Carpentry	2 0 0	
Ditto Earthwork	2 0 0	
Ditto Surveying Part I	3 8 0	
Ditto Drawing Part I	3 8 0	
Ditto Drawing, Part II	2 8 0	
Mellor's Students Chemistry	8 10 0	
Jones, A Junior Course of Practical Chemistry	2 1 0	
<i>Mathematics Department</i>		
(Pure and Applied Mathematics and Physics)		
Elements of Co-ordinate Geometry—Loney	4 8 0	
Elementary Calculus—Puri	2 12 0	
Elements of Statics—Puri	6 0 0	

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	Rs a p	
Box of Drawing Instruments		} Prices too variable to be given
T Square 36"		
Set squares 45° and 60°		
Brushes and colours		
Two drawing boards (24"×36") and (24"×18")		
Workshop tool set		
One ten inch slide rule		
<i>Books—</i>		
1ST YEAR CIVIL ENGINEER CLASS		
<i>Civil Engineering Department</i>		
(Including Surveying Drawing and Chemistry)		
"	9 6 0	
	2 4 0	
	2 0 0	
	2 4 0	
	2 0 0	
Ditto Earthwork	2 0 0	
Ditto Surveying Part I	3 8 0	
Ditto Drawing Part I	3 8 0	
Ditto Drawing Part II	2 8 0	
Mellor's Students Chemistry	8 10 0	
Jones, A Junior Course of Practical Chemistry	2 1 0	
<i>Mathematics Department</i>		
(Pure and Applied Mathematics and Physics)		
Elements of Co-ordinate Geometry—Loney	4 8 0	
Elementary Calculus—Puri	2 12 0	
Elements of Statics—Puri	6 0 0	

APPENDICES.

Last of prices, etc —(continued)

Details	Price	Remarks
<i>Mathematics Department—(concl'd)</i>	Rs a p	
Dynamics—London	6 6 0	
Hydrostatics—Jessop and Gaunt	3 4 0	
Theory of Structures—Morley	9 6 0	
Heat for Engineers—Darling	9 2 0	
Tutorial Physics Volume III, Sound—Stewart	4 7 0	
Technical Electricity—Davidge and Hutchinson.	4 7 0	
<i>Mechanical and Electrical Engineering Department</i>		
Heat Engines—D A Low	11 4 0	
Theory of Machines—R F McHay	15 0 0	
2ND YEAR CIVIL ENGINEERING CLASS		
<i>Civil Engineering Department</i>		
(Including Surveying Drawing and Chemistry)		
Husband and Harby's Structural Engineering	12 0 0	
	14 7 0	
	5 0 0	
Waterworks Handbook by Flinn, Weston and Bagert	12 0 0	
Buckley's Pocket Book of Irrigation Formulas etc	22 8 0	
Whyatt's Streets Roads and Pavements	2 0 0	
Agg's Construction of Roads	12 0 0	
Hatch's Petrology (Mineralogy)	4 2 0	
Geikie's Geology	5 3 0	
Roorkee Treatise Irrigation Volume I	5 0 0	
*Ditto Irrigation, Volume II	2 8 0	*Out of print.
Ditto Railways	5 12 0	
Ditto Roads	2 8 0	
Ditto Estimating	5 8 0	
Ditto Bridges	5 0 0	
Ditto Water Supply	3 0 0	
Ditto Surveying Part II	3 0 0	
Chambers Logarithmic Tables	5 0 0	

APPENDICES.

List of prices, etc —(continued)

Details	Price	Remarks
<i>Mathematics Department</i>	Rs a p	
(Pure and Applied Mathematics and Physics)		
Infinitesimal Calculus—Lamb	10 0 0	
Theory of Structures—Morley	9 6 0	
Hydraulics—Lea	14 7 0	
<i>Mechanical and Electrical Engineering Department</i>		
	12 6 0	
	14 7 0	
	0 12 0	
	1 6 0	
T	10 5 0	
Alternating Current Electrical Engineering— W T Maccall	11 4 0	
3RD YEAR CIVIL ENGINEERING CLASS		
<i>Civil Engineering Department</i>		
(Including Surveying Drawing and Chemistry)		
Reinforced Concrete by Taylor and Thompson —		
Volume I	37 8 0	
Volume II	34 14 0	
Sprague's The Stability of Arches	3 12 0	
Scientific Design of Masonry Arches by Alexander and Thomson	2 0 0	
Roorkee Manual of Ferrotypc Printing	3 8 0	
	13 4 0	
	1 12 0	
	3 0 0	
Levelling Field Book College pattern	1 4 0	
Survey Field Books 50 leaves	0 12 0	
Survey Note Books	3 0 0	
Entrance donation to Mess for 1st and 2nd year Civil Engineer Class students only each year	10 0 0	English students only.
Yearly donation to Sports and Regatta Fund	3 0 0	
Entrance donation to Recreation Club for 1st and 2nd year Civil Engineer Class students only each	10 0 0	All Civil Engineer students
Yearly donation to Civil Engineer Class Club	5 0 0	All students

APPENDICES.

Current monthly expenses for nine months only.

(a) *European students.*

		Rs	a	p
Fixed charges	College fee	24	0	0
	Rent and Conservancy	5	12	0
	Rent of College furniture	2	8	0
	Recreation Fund	10	0	0
	C E Mess subscription	5	0	0
	Engineer Class Club	3	0	0
	Messing three meals	45	0	0
	Bearer	12	0	0
	Bhist	2	0	0
	Dhobi	3	0	0
	Sweeper	2	0	0
	Electric light	3	0	0
Miscellaneous extra expenses		18	12	0
Total		136	0	0

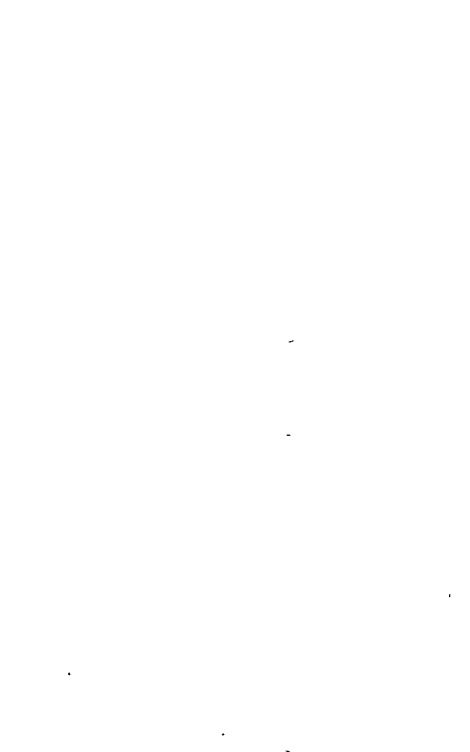
(b) *Indian students*

		Rs	a	p
Fixed charges	College fee	24	0	0
	Rent and conservancy	5	12	0
	Rent of College furniture	2	8	0
	Recreation Fund	10	0	0
	Engineer Class Club	3	0	0
	Messing	25	0	0
	Servant	6	0	0
	Dhobi	2	0	0
	Sweeper	1	0	0
	Electric light	3	0	0
Miscellaneous extra expenses		17	12	0
Total		100	0	0

NOTE—A charge of Rs 4 per month is made for current for each elect to fan in use during the hot weather

(c) *Additional non recurring expenses for both European and
Indian students*

	Rs	a	p
(i) Fee charged to each 3rd year student in April for appearing for the Final Examination	40	0	0



*The rules in this Circular are liable to revision without notice
in view of possible changes in the Course of Study,
orders of Government, etc.*

[C I R C U L A R.]

**THOMASON COLLEGE OF CIVIL ENGINEERING,
ROORKEE.**

*These rules apply to admissions in 1936
and until further notice*

OVERSEER CLASS

1 The Overseer Class has been constituted at the College to meet the requirements of the Subordinate Engineering Service of the Public Works Department of the United Provinces and of the public demands for a class of men trained as overseers

2 Candidates for admission to this class must not be under 16 or above 21 years of age on June immediately preceding the entrance examination in which they wish to appear

The age of a candidate will be taken from the original University records, and for candidates who have not appeared for a University examination, from College, or failing a College, from school records. No alterations in the records will be recognized except in the case of purely clerical errors. Applications for the examination must be accompanied by a true copy of University College or School registers as the case may be, signed by the Registrar Principal or Head

Master, and under no circumstances will any alteration be accepted to the advantage of the candidate

3 The class is intended primarily for Europeans, Anglo-Indians and Indians resident within the United Provinces. Extra provincial candidates will be admitted only if vacancies remain after the admission of the United Provinces candidates. An annual contribution of Rs 1,000 per student is charged for extra provincial candidates. Where a candidate is willing to bear this contribution himself, the application for permission to appear in the admission examination may be submitted direct to the Principal, otherwise it should be submitted through the Government of the Province or State in which the candidate resides. The Government or State forwarding such an application should clearly state that in the event of the candidate obtaining in the examination a place which entitles him to admission the Government or State concerned will be willing to pay the above contribution. The United Provinces Government may in special cases waive this contribution.

4 Applications for admission should reach the Principal, complete in all respects, not later than May 1, preceding the entrance examination accompanied by a statement of—

The date of birth of the candidate

The school or schools at which he has been educated

The profession, situation, relationship and residence of his father or guardian

N.B.—No notice will be taken of applications which are not complete in every respect, nor will any correspondence be entered into concerning them. Forms of application can be obtained on request from the Principal.

5 Every candidate will be required to produce testimonials, (copies properly certified by a Government gazetted

NOTE.—To constitute residence in a particular province or state the parent or guardian of a candidate for admission to the College must have definitely settled and resided there for a period of three years

officer will be accepted), which will not be returned, of good moral conduct signed by the instructor under whom he has been educated, or of some other superior under whom he may have been employed or brought up, and these testimonials should have reference especially to his conduct during the two years immediately preceding his application for admission

6 The qualifying tests for admission to the entrance examination will be the High School examination conducted by the Board of Education, United Provinces, or the School Leaving Certificate examination of this province or the Matriculation examination of the Allahabad University (or equivalent examination of other provinces at present recognized by the Allahabad University for purposes of Matriculation) In the case of European candidates, the Senior Cambridge examination or the High School Final examination under the Code of Regulations for European schools in force in Bengal Bombay and Madras Presidencies, the United Provinces, Punjab or Central Provinces will also be recognized Those candidates, who have appeared for any of the examinations, noted as the qualifying tests before the date of the College entrance examination, but the results of which have not been published before the last date for submission of their applications to the Principal, are allowed to sit for the College entrance examination Such candidates must, however, furnish, with their application forms, a certificate signed by the Head of their school or College, stating that they have so appeared Their names will be excluded from the list of successful candidates till the results of the qualifying tests are known

7. In case of pupils of Government schools who have passed as "Teachers certificates must be furnished that three years have elapsed since they left the Normal School, or

11 The entrance examination is competitive, and those who stand highest on the list of past candidates (only to the number of available vacancies, which is for the present fixed at 40), will be selected for admission to the College. Any candidate who, after being duly notified, fails to join the College on the day fixed for the re opening of the session, or, who before that date fails to obtain from the College authorities definite permission to join on some later date, will forfeit his right to admission.

12 No degree certificate, etc., obtained by him at any other institution will entitle a candidate to enter the College, nor will it exempt him, in whole or in part from the entrance examination above detailed.

13 Each examination is complete in itself and no credit for marks gained in one examination is carried on to any other examination. A candidate who has failed in or withdrawn from an examination after his name has been registered and presents himself for examination on a subsequent occasion must undergo the full examination and furnish a fresh fee and certificate. No replies will be given to any telegram or letter enquiring the results of the entrance examination. A copy of the printed result will be sent to each candidate when published.

14 In this class a College fee of Rs. 6 a month during the session will be charged to students admitted through the entrance examination. All students of this class will be provided with quarters in the College hostels at a monthly rent of Re. 1 but no member of a student's family is allowed to reside in them with him.

The hostels have been electrified the charges being Rs. 2 per light per month and Rs. 4 per fan per month. Students must provide their own fans.

15. There will be 8 scholarships of the value of Rs. 25 per mensem, each tenable for the nine months of the College session, awarded annually on the results of the entrance examination and on the first year's work and examinations. All scholarships are reserved for United Provinces candidates.

16 Each student will make his own arrangements for the purchase of the necessary class books and instruments. The probable expenses are shown in the appendices. No one should present himself for admission who is not prepared to meet all charges as well as those of feeding himself, and dressing in decent and clean apparel.

17 Any student failing to pay his College dues,* or to make sufficient progress in study, or whose conduct is unsatisfactory, will be suspended or ultimately removed from the College. The parent or guardian of any student so suspended or removed shall be held responsible for the payment of any debts whatsoever which may have been contracted while the student was in the College. Although every precaution is taken to prevent students from running into debt, the College authorities are in no way to be considered responsible for such debt.

18 The course is of 2 years' duration. The College session commences on or about October 16, and ends on July 15, following. At the end of the first session examinations are held, and no student who fails to attain the standard prescribed for the first year course will be allowed to continue

NOTE—(*) The word College 'Dues' includes —

- (i) College fee,
- (ii) Rent and conveyance,
- (iii) Rent of College furniture,
- (iv) Electric Current charges
- (v) Recreation fund subscription and cost of articles purchased from recreation stores,
- (vi) All dues in connexion with Overseer Class Club
- (vii) All dues of College Dairy, College shoe maker, College shop keeper, College tailor, College sweet seller and College stores

his studies at the College To qualify for return to the College at the end of the 1st year a student has to obtain at least 33 per cent of the marks allotted to each group and 50 per cent. of the grand total At the close of the second session the final examinations will be held

19 The College vacation will be from July 15 to October 16 or thereabouts Students will not be allowed to stay in the College hostels during the vacation

20 Upon successful completion of the course two classes of certificates are awarded as follows

I The Higher Certificate awarded to students obtaining at least 50 per cent in each group and 60 per cent of the total marks

II The Ordinary Certificate awarded to students obtaining at least 33 per cent in each group and 50 per cent of the total marks

21 The Public Works Department of the United Provinces generally annually take a certain number of successful students as apprentices to undergo a further year's practical training on works Such selected students are called apprentice overseers and are selected in order of merit During their year's apprenticeship they are placed under the charge of an experienced Instructor During this apprentice year they will retain their positions as students and will continue to be borne on the College list receiving a salary of Rs 40 per mensem which is paid by the College

22 The apprentice overseers will keep notes of the works on which they are instructed and these notes they will submit monthly with a diary of occupation through the Instructor and the Executive Engineer to the Principal of the College These officers will note on the diary their opinions regarding the apprentice's application to work and conduct.

and the appointment of each apprentice to the Public Works Department will depend on vacancies and whether his steadiness, temper, intelligence, industry and practical knowledge of the works in which he has been instructed are satisfactory

23 During an apprentice overseer's period of training all expenses of travelling will be paid by the College in accordance with the travelling allowance rules sanctioned by Government and in force at the time

24 The list of the text books etc., used in the class, is given in the appendices. The prices quoted are approximate. Books are available at the Book Dépôt in the College.

25 Drawing instruments, drawing boards, T-squares, etc., are procurable in the bazar. Every student must provide himself with these at his own cost.

26 Any student who is expelled from the College for misconduct will not be allowed to appear in any examination conducted by the College.

27 It is desirable that every student should be able to swim before joining the College.

28 Students will not be permitted to appear for any external examinations during their College course.

29 Students will be tested in Riding before the completion of their College course.

30 Each student will be required to purchase a copy of the Standing Orders of the College which is on sale in the Government Photo Litho Press Book Dépôt, Roorkee, at 13 annas a copy, including postage. Ignorance of the rules therein contained will not be accepted as an excuse for breaking them.

ROORKEE
July 31, 1935

H J AMOORE, I S E.,
Principal, Thomason College

APPENDICES

Forms required to accompany a candidate's application for admission to the Thomason College Roorkee are obtainable from the Principal

(1) Statement showing age education etc of candidate --

Name	Date of birth	Province of domicile of the father and if father not living of guardian where he must have definitely settled and resided for a period of three years <i>(see footnote page 91)</i>	School or schools at which educated	Name profession residence of father or guardian showing relationship	Remark
1		3	4		6

I am willing to be vacated and in the case of European students to incur at least any other order in relation to

/ s / e

(Place all)

(2) Educational certificate *

(3) Moral certificate

(4) Medical certificate

(5) A certificate of the recorded date of birth

*Copies returned to the Government of India will be a full

APPENDICES.

FORM OF MEDICAL CERTIFICATE

I certify that I have carefully examined———; that his eyesight is of the standard prescribed, that he is fairly robust, and his constitution is sound, that he has no disease, or bodily or mental infirmity unfitting him now, or likely to unfit him in the future, for active outdoor service in the Public Works Department*

NB—The above certificate must be signed within a month before date of submission by a Commissioned Medical Officer or by a Medical Officer in charge of a civil station, and must include a description giving clearly the personal marks of identification of the candidate who has been medically examined. No other certificate will be accepted, nor will applications be entertained unless the above rules be strictly complied with.

Full particulars of the Course of Study in this Class are contained in a pamphlet which can be obtained from the Government Photo Litho Press Book Dépôt Roorkee, at 15 annas a copy including packing and postage charges

*The standard prescribed is as follows —

of refraction, does not exceed 3.5D the acuteness of vision in one eye, when

and that the sight of one eye equals $\frac{2}{3}$ and the other $\frac{1}{3}$, with or without such lens or lenses

5. A candidate having a defect arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$. In such a case the better eye must be emmetropic. Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules, may exclude a candidate.

6. A candidate is disqualified if he be unable to distinguish the principal colours (achromatopsia).

7. Paralysis of one or more of the exterior muscles of the eyeball disqualifies a candidate for the service.

APPENDICES

Memorandum of the Expenses of Students of the
Overseer Class.

The following information is published for the guidance of parents and guardians, and for their assistance in determining the probable expenses of a course of instruction at the College

Economical management is aided as far as possible by the College authorities

It must be clearly understood that students cannot be permitted to remain in the College if their fees or bills of any kind are not paid promptly on demand

The probable expenses of a student while at the College are shown under two heads viz (i) the initial expenses of each yearly term and (ii) the monthly current expenses

With regard to current expenses, the regular monthly charges amount to approximately Rs 12-8-0 (see details). The charges for messing, personal servants and any other expenses the student may incur are beyond the control of the College staff

The above mentioned regular charges of approximately Rs 12-8-0 must be paid before the 21st of the month to which they relate and any student in arrears on the first of each month will lose all marks for any examination that may occur between this date and that on which he clears his account

APPENDICES

(i) Initial expenses.

N B—List and prices are liable to alteration Prices shown are all approximate

Detail	Price	Remarks
	Rs a p	
Box of drawing instruments		} Prices too variable to be given
T=Square, 36		
Set squares 45° and 60°		
Brushes and colours		
Two drawing boards (24" × 36") and (18" × 24")		
Workshop tools		
BOOKS		
FIRST YEAR		
Pure Mathematics		
	4 8 0	
	4 0 0	
	3 12 0	
	1 11 0	
Ditto ditto Part II	2 4 0	
Applied Mathematics		
Mechanics—Morley	4 14 0	
Natural Science		
Class Book of Physics—Gregory and Hailey, Parts III, IV, VII, VIII, each	1 8 0	
Survey and Drawing		
Roorkee Manual of Surveying Part I	3 8 0	
Ditto of Drawing Part I	3 8 0	
Ditto of Drawing Part II	2 8 0	
Civil Engineering		
Roorkee Manual of Materials	2 4 0	
Ditto of Ironwork	12 0 0	
Ditto of Masonry	2 4 0	
Ditto of Building Construction	12 0 0	
Ditto of Carpentry	12 0 0	
M. L. S. Handbook, Volume I	6 10 0	
Ditto Volume II	1 0 0	

APPENDICES

Detail	Price	Remarks
	Rs a p	
<i>Mechanical and Electrical Engineering</i>		
Elementary Heat Engines—Ripper	3 0 0	
Gas and Oil Engine Operation—Okill	3 0 0	
(SECOND YEAR)		
<i>Pure and Applied Mathematics</i>		
Building Mechanics—Sheppard	8 4 0	
Hydraulics for beginners—Lea	4 12 0	
<i>Civil Engineering</i>		
Roorkee Manual of Roads	2 8 0	
Ditto of Estimating	5 8 0	
Ditto of Bridges	5 0 0	
Ditto of Irrigation, Volume I	5 0 0	
*Ditto of Irrigation, Volume II	2 8 0	*Out of print
Ditto of Railways	5 12 0	
<i>Sanitary Engineering</i>		
Roorkee Manual, Part I Water Supply	3 0 0	
Ditto Part II Sewerage and Drainage works	3 0 0	
(SECOND YEAR)		
Furniture	10 0 0	Half price usually recoverable on completion of Col lege course

V R — The son of the Rev. Mr. R. V. R. — 1890

APPENDICES

(ii) Current monthly expenses for nine months only.

Indian students.

		Rs	a	p	
Fixed charges	{ College fee	6	0	0	
	{ House rent	1	0	0	
	{ Recreation Club	3	8	0	
	Messing	15	0	0	Variable
Servants—Cook	Re 18, servant Re 18	3	0	0	
	Dhobi	1	8	0	
	Barber	0	8	0	
	Electric energy	..	3	0	0 (average).
	Miscellaneous, about	11	8	0	
Total		<hr/> 45 0 0 <hr/>			

The above is for Indian students For Europeans the monthly expenses would probably amount to Rs 80

The rules in this Circular which have been approved by Government in letter No G XVIII—30(4S), dated February 21, 1933, are liable to revision without notice in view of possible changes in the Course of Study orders of Government, etc

[C I R C U L A R.]

**THOMASON COLLEGE OF CIVIL ENGINEERING,
ROORKEE.**

1935

*These rules apply to admissions in 1936
and until further notice*

DRAFTSMAN CLASS

1 For admission to the Draftsman Class an entrance examination will be held annually at the Thomason College during the first week of June. Applications for admission must be submitted to the Principal before May 15. The subjects for the examination will be (1) Arithmetic, (2) English (3) the preparation of simple drawing scales and italic printing and (4) Geometry and very simple Mensuration. The maximum marks for each subject are 100. The standard in these subjects (except Drawing) will be that of the School Promotion Examination, Class VIII. The first ten on the list of passed candidates will be selected annually for admission to the Draftsman Class. No entrance fee will be charged for the examination. Indians of pure Asiatic

descent, whose domicile* is the United Provinces are only eligible for admission to the class. One-third of the marks in each subject and one half of the total marks are required for passing.

2 The minimum qualifying test for permission to appear for the entrance examination will be the School Promotion Examination in Class VIII of an Anglo-Vernacular School

Candidates must submit a certificate signed by the Head Master of the school in which they have been educated, showing that they possess the minimum educational qualifications and are of good character, industrious and have an aptitude for Drawing.

3 All candidates must furnish a certificate of sound health and physical fitness in the form a sample of which is given in the appendices. No other form will be accepted.

4 Forms of application for admission, samples of which are given in the appendices may be obtained on request from the Principal.

5 The entrance examination will take place at the same time as the entrance examinations for other classes in the College and accepted candidates should present themselves for the entrance examination on the date which will be notified to them, all are required to be present on that date, otherwise they will forfeit the right of admission. Their admission will depend on the results of the examination and they should join the class on October 16 or on the date notified to them.

* NOTE.—To constitute residence in a particular province or state the parent or guardian of a candidate for admission to the Thomason College, Rooh ee, must have definitely settled and resided there for a period of three years.

6 Full discretion rests with the Principal to remove any student who appears to be unlikely to profit by the training. A removal under this rule will imply no reflection on the student's character.

7 The College session for the Draftsman Class commences on October 16 each year or thereabouts and ends on July 15 in the following year.

8 Candidates will pay no fees and will be provided with free quarters, if available, but no member of a candidate's family will be allowed to reside in them with him.

9 No stipends will be given, but not more than twelve scholarships of R. 4 per mensem are available and can be given at the discretion of the Principal to such candidates as show marked application and ability and are of United Provinces domicile. No student can receive a scholarship till he has been in the College for three months. No scholarship will be payable while a student is on leave or during the vacation.

10 Instruments and materials will be supplied free for the use of candidates but remain the property of the College, and all work turned out during working hours will also be the property of the College.

11 On completion of the course of training, students will be granted a certificate as "Draftsman" with "qualified in Simple Estimating" in the case of those students only who attain the requisite standard in the subject. The course of training for the Draftsman Class will extend over three years, but any candidate who gains admission and in the opinion of the Principal is initially a good draftsman may be allowed to join the second year class. The College does not undertake to find employment for successful students though it will give all the assistance it can. Certificate holders are expected to find employment for themselves in the open market.

12 Any student who is expelled from the College for misconduct will not be allowed to appear in any examination conducted by the College

13 Each student will be required to purchase a copy of the Standing Orders of this College, which is on sale in the Government Photo Latho Press Book Depot Roorkee, at 18 annas a copy, including postage, and ignorance of the rules therein contained will not be accepted as an excuse for breaking them

ROORKEE

July 31 1935

H J AMOORT I S E ,

Principal Thomason College

APPENDICES.

Forms required to accompany a candidate's application for admission are obtainable on application to the Principal

(1) Statement showing age, education, etc., of candidate —

Name of candidate	Date of birth as furnished to the school	Province of domicile of the father, and if father not living, of guardian, where he must have definitely settled and resided for a period of three years, <i>vide</i> footnote, page 108	School at which educated	Name, profession, status or residence and caste of father or if father not living of guardian, showing relationship of latter to candidate	Remarks
1	2	3	4	5	6

I am willing to be vaccinated on admission.

(Place and date)

(Signature of candidate)

Signature of Head Master of School

(2) Certificate of character and education, etc (*vide* paragraph 2)

(3) Birth certificate or affidavit

(4) Medical certificate (*vide* paragraph 3).

APPENDICES.

FORM OF MEDICAL CERTIFICATE

I certify that I have carefully examined———, that his eyesight is of the standard prescribed,* that he is fairly robust, his constitution is sound, and that he has no disease, or bodily or mental infirmity unfitting him now, or likely to unfit him in the future for active outdoor service in the Public Works Department

N.B.—The above certificate must be signed, within a month before date of submission, by a Commissioned Medical Officer or by a Medical Officer in charge of a civil station, and must include a description, giving clearly the personal marks of identification of the candidate, who has been medically examined. No other certificate will be accepted

*The standard prescribed is as follows :

1. If myopia in one or both eyes exists, a candidate may be passed, provided the ametropia does not exceed 3.5D, and if, with correcting glasses not exceeding 3.5D the acuteness of vision in one eye equals $\frac{5}{8}$ and in the other $\frac{5}{8}$, there being normal range of accommodation with the glasses.

2. Myopic astigmatism does not disqualify a candidate, provided the lens or combined spherical and cylindrical lenses required to correct the error of refraction, does not exceed 3.5D; the acuteness of vision in one eye, when corrected, being equal to $\frac{5}{8}$ and in the other $\frac{5}{8}$, together with normal range of accommodation with the correcting glasses there being no evidence of progressive disease in the choroid or retina.

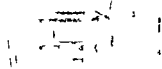
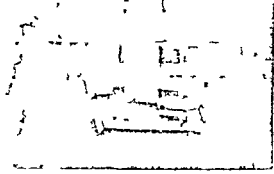
3. A candidate having total hypermetropia not exceeding 4D is not disqualified, provided the sight in one eye when under the influence of atropine equals $\frac{5}{8}$ and in the other eye equals $\frac{5}{8}$, with +4D glasses or any lower power.

4. Hypermetropic astigmatism does not disqualify, provided the lens or combined lenses required to cover the error of refraction do not exceed 4D and that the sight of one eye equals $\frac{5}{8}$ and the other $\frac{5}{8}$ with or without such lens or lenses.

5. A candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$. In such a case the better eye must be emmetropic. Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules, may exclude a candidate.

6. A candidate is disqualified if he be unable to distinguish the principal colours (*achromatopsia*).

7. Paralysis of one or more of the exterior muscles of the eye-ball disqualifies a candidate for the service.



The Thomson College C E Mess

COURSE OF STUDY AND SYLLABUS.

CIVIL ENGINEER CLASS, 1935-36

THE chief points kept in view in arranging this course of study are, to ensure the necessity for steady work throughout the whole course, and to co ordinate the instruction given in each subject so as to lead up to a thorough test of the qualifications necessary for a Civil Engineer of as high a grade as a college training can produce, special attention being paid to the local conditions of India. This test is represented by the Project and the Final Examinations.

Four tenths of the total marks at the end of the 1st year are carried forward in each group to the 2nd year. Similarly, seven tenths of the total marks at the end of the 2nd year are carried forward to the 3rd year. Continuous steady work is necessary to ensure qualification at the end of each year.

TERMS AND EXAMINATIONS.

First Term—

College Attendances —From October 16 to a variable date in February

Mid Sessional Examinations —For 1st and 3rd year C E students start on the 1st or 2nd Monday in February, whichever falls nearest to February 7, or as may be arranged. For 2nd year C E students these examinations start three weeks before the examinations of 1st and 3rd year C E students.

Second Term—

College Attendances —Start on the Monday following the Mid Sessional Examinations and continue till about the first Saturday in June

Revision in Quarters —During Entrance Examinations

Final Examinations —Start about the 2nd Monday in June

The Course of Study extends over three years and comprises the following subjects grouped under six heads —

GROUP	I	Civil Engineering
	II	Pure and Applied Mathematics
,	III	Surveying and Drawing
	IV	Applied Science
	V	Mechanical and Electrical Engineering
,	VI	Projects
"	VII	Physique and General Fitness

The marks each student has to obtain to qualify for a return to the college upon completion of his 1st and 2nd year, and to obtain the College Diploma in Civil Engineering, awarded upon completion of his 3rd year, are as follows —

A —To return to the college at the end of the first year, the students are required to obtain 33 per cent. of the marks allotted to each Group, and 50 per cent. of the total marks

B —To return to the college at the end of the second year, the students are required to obtain 33 per cent. of the marks allotted to each Group in that year (i.e. in the second year), and 50 per cent. of the total marks for the two years, i.e. of the full marks for second year together with the reduced marks of the first year.

C —To pass out of the college at the end of the third year, the students are required to obtain 33 per cent. of the marks allotted to each Group in that year (i.e. the third year), and 50 per cent. of the total marks for the three years, i.e. of the full marks for the third year, together with the reduced marks for the first and second years

D —The Ordinary Diploma is awarded to students, who qualify as above, but obtain less than 66 per cent. of the total marks

E —The Honours Diploma is awarded to students, who qualify as above and obtain 66 per cent or more of the total marks

A student who fails to qualify as above will neither be allowed to return to the college at the end of his 1st or 2nd year nor will he be awarded the Diploma in Civil Engineering as the case may be. Should his failure, however, be due to prolonged absence through sickness or other circumstances beyond his control, such special cases will be considered and decided on their merits

The Examinations the marks assigned to them, and the Time tables are shown on the following pages

EXAMINATION AND MARKS

(First Year.)

THEORETICAL.

<i>1st half session.</i>		<i>2nd half session.</i>	
	Marks.		Marks.
1. Calculus and Analytical Geometry ..	100	1. Applied Mechanics I ..	100
2. Graphical Statics ..	100	2. Elementary Engineering ..	100
3. Mechanics ..	100	3. General Mathematics ..	100
4. Applied Mechanics ..	100	4. Calculus ..	100
5. Survey Theory ..	100	5. Analytical Geometry ..	100
6. Physics ..	100	6. Mechanics ..	100
7. Theoretical Chemistry ..	100	7. Applied Mechanics II ..	100
8. Mechanical Engineering ..	100	8. Drawing ..	100
		9. Physics ..	100
		10. Theoretical Chemistry ..	100
		11. Mechanical Engineering ..	100
	<hr/> 800 <hr/>		<hr/> 1,100 <hr/>

PRACTICAL AND CLASS WORK.

1. Class Work—Mathematics	100	1. Mathematical Note-books	100
2. Survey Practical ..	100	2. Class Work—Mathematics	100
3. Class Work—Physics ..	50	3. Drawing ..	200
4. Practical Chemistry ..	100	4. Practical Physics ..	150
5. Mechanics Laboratory ..	100	5. Class Work—Physics ..	50
		6. Practical Chemistry ..	100
		7. Class Work—Chemistry ..	100
		8. Mechanical Engineering ..	100
	<hr/> 450 <hr/>		<hr/> 900 <hr/>
	<hr/> 1,250 <hr/>		<hr/> 2,000 <hr/>

TOTALS.

			Marks.
<i>1st Term</i>	..	..	.. 1,250
<i>2nd ..</i>	..	..	.. 2,000
			<hr/>
		GRAND TOTAL	.. 3,250
			<hr/>

EXAMINATION AND MARKS

(Second Year)

THEORETICAL

1st half session		2nd half session	
	Marks		Marks
1 †Buildings	100	1 *Civil Engineering I	100
2 Calculus and Differential Equations	100	2 *Civil Engineering II	100
3 Applied Mechanics	100	3 *Civil Engineering III	100
4 Hydraulics	100	4 Estimating	100
5 Electrical Engineering	100	5 Calculus and Differential Equations	100
6 Applied Chemistry	100	6 Applied Mechanics	100
7 Mechanical Engineering	100	7 Electrical Engineering	100
8 Descriptive Engineering	100	8 Geology and Mineralogy	100
		9 Mechanical Engineering	100
		10 Survey Theory	100
	<hr/> 800		<hr/> 1 000

PRACTICAL AND CLASS WORK

1 Field Engineering	100	1 Engineering Note books and Class Work	50
2 Class Work—Mathematics	100	2 Mathematical Note books	100
3 Survey	250	3 Class Work—Mathematics	100
4 Class Work—Electrical Engineering	50	4 Civil Engineering Design	250
5 Mechanical Engineering Design	200	5 Practical Electrical Engineering	100
		6 Class Work—Electrical Engineering	100
		7 Class Work—Chemistry and Mineralogy	100
		8 Mechanical Engineering	100
	<hr/> 700		<hr/> 900
	<hr/> 1 500		<hr/> 1 900

TOTALS

	Marks
1st year carried forward (4/10 of 3 250)	1 300
2nd ,	3 400
GRAND TOTAL	<hr/> 4 700

†Theory of Structures (Buildings)

*Theory of Structures (Buildings and Bridges) II Hydraulic Engineering III General Civil Engineering

EXAMINATION AND MARKS.

(Third Year.)

THEORETICAL

1st half session		2nd half session	
	Marks		Marks
1 *C F I Buildings	100	1 *C E I Buildings	100
2 C E II Irrigation	100	2 C E II Irrigation	100
3 C E III Reinforced Con crete	100	3 C E III, Reinforced Con crete	100
4 Sanitary Engineering	100	4 Bridges	100
5 Estimating	100	5 Water supply and Sani tary Engineering	100
6 Curves Alignments and Hydro Electric Surveys	100	6 Survey I	100
7 Astronomy	100	7 " II	100
8 Electrical Engineering	100	8 Mechanical Engineering	100
9 Mechanical Engineering	100	9 Electrical Engineering	100
	<u>900</u>		<u>900</u>

PRACTICAL AND CLASS WORK

1 Survey	100	1 Accounts ..	100
2 Civil Engineering Des gn	250	2. Mechanical Engineering	100
3 Class Work—Electrical Engineering	100	3 Process Work	100
	<u>450</u>		<u>300</u>
	<u>1 350</u>		<u>1,200</u>

TOTALS

	Marks
1st and 2nd years Marks, (7/10 of 4,700)	3 290
3rd year's Marks	2 550
Projects	1,250
Physique and General Fitness	1 000
	<u>8 090</u>
GRAND TOTAL	8 090

TIME-TABLES

TIME-TABLES

1st term

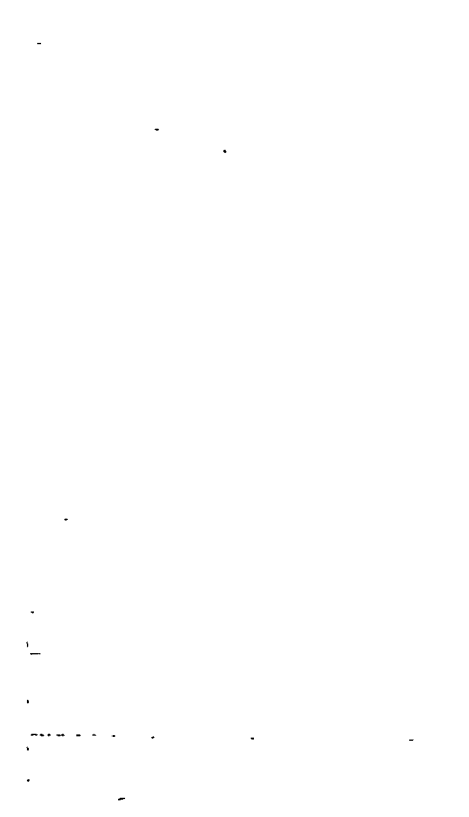
	Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1st Year*	8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4	Mechanics Lab Mechanics Lab Mathematics Lec Mech Eng Lec Recess Survey Survey	Mathematics Lec Chemistry Lec Appd Mechs Lec Drawing Lec Recess Drawing Tut Drawing Tut	Survey Survey Physics Lec Recess Physics Lab Physics Lab	Mechanics Lec Mathematics Tut Appd Mechs Lec Mech Eng Lec Recess Chemical Lab Chemical Lab	Appd Mechs Tut Chemistry Lec Mechanics Tut Mechanics Tut Recess Drawing Tut Drawing Tut	Workshops Workshops Physics Lec Recess Chemistry Lab Chemistry Lab
2nd Year*	8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4	Mech Eng Lab Mech Eng Lab Mech Eng Lec Mathematics Lec Recess Mech Eng Lab Mech Eng Lab Mech Eng Lab	Survey Survey Survey Survey Recess Survey Survey Civil Eng Lec	Mech Eng Lec Appd Mechs Tut Appd Mechs Tut Recess Appd Mechs Lec Mech Eng Tut	Mech Eng Des Mech Eng Des Appd Mechs Lec Mathematics Lec Recess Civil Eng Lec Civil Eng Lec	Survey Survey Survey Survey Recess Survey Survey Elect Eng Lec	Chemistry Lec Mech Eng Lec Appd Mechs Lec Recess Mathematics Tut Mathematics Tut
3rd Year*	8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4	Survey Survey Estimating Recess Estimating Civil Eng Lec	Mech Eng Lec Civil Eng Lec Civil Eng Lec Civil Eng Lec Recess Civil Eng Des Civil Eng Des	Elect Eng Lec Civil Eng Lec Civil Eng Lec Recess Survey Survey	Civil Eng Lec Civil Eng Lec Civil Eng Tut Recess Mech Eng Lab Mech Eng Lab	Civil Eng Lec Civil Eng Des Civil Eng Des Recess Civil Eng Tut Civil Eng Tut	Mech Eng Lec Mech Eng Lec Civil Eng Lec Recess Mech Eng Lab Elect Eng Lab

* Mid-annual examinations for 1st and 3rd years start generally first Monday in February and for 2nd year start generally third Monday in January

TIME-TABLES

2nd term

	Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1st Year	8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4	Mathematics Lec Mathematics Tut Physics Lec Physics Lab *Survey	Applied Mech. Lec Chemistry Lec Mech Eng Lec Recess Drawing Tut *Survey	Drawing Lec Drawing Tut Recess Mech Eng Des Mech Eng Des	Mechanics Lec Civil Eng Lec Mech Eng Lec Recess Drawing Tut Drawing Tut	Applied Mech Lec Chemistry Lec Physics Lec Recess Chemical Lab Chemical Lab *Survey	Mathematics Lec Mechanics Tut Applied Mech Tut Recess Workshops Workshops
2nd Year before Mid- Exam- ina- tion.	8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4	Mech Eng Lec Civil Eng Lec Applied Mech Lec Recess Civil Eng Des Civil Eng Des	Elect Eng Lec Estimating Geo and Min Lec Recess *Applied Mech Tut *Applied Mech Tut	Mathematics Lec Geo and Min Lec Geo and Min Lab Recess Civil Eng Des Civil Eng Des	Mech Eng Lec Civil Eng Lec Civil Eng Lec Recess Civil Eng Des Civil Eng Des	Elect Eng Lec Estimating Lab Mech Eng Lec Recess Civil Eng Civil Eng	Mech Eng Lec Elect Eng Lec Civil Eng Lec Recess Mech Eng Lab Elect Eng Lab
2nd Year after Mid- Exam- ina- tion.	8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4	Elect Eng Lec Mathematics Lec Mathematics Tut Recess Civil Eng Des Civil Eng Des	Survey Lec Survey Lec Mathematics Recess Architecture Architecture	Elect Eng Des Civil Eng Des Civil Eng Des Recess Civil Eng Civil Eng	Survey Lec Survey Lec Mathematics Lec Recess Architecture Architecture	Elect Eng Tut Elect Eng Tut Mathematics Recess Civil Eng Des Civil Eng Des	Civil Eng Civil Eng Civil Eng Recess Civil Eng Civil Eng
3rd Year after Pre- fect.	8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4	Accounts Elect Eng Civil Eng Recess Civil Eng Civil Eng	Workshops Workshops Workshops Recess Accounts Accounts	Accounts Accounts Accounts Recess Civil Eng Civil Eng	Workshops Workshops Workshops Recess Accounts Accounts	Accounts Elect Eng Civil Eng Recess Civil Eng Process Work	Process Work Process Work Process Work Recess Process Work Process Work



Group I.—CIVIL ENGINEERING.

BUILDING MATERIALS *

(1st year 2nd half session)

Stone—Selection Characteristics Classification and varieties Quarrying Blasting Dressing Implements

Bricks and Tiles—Classes of bricks and their distinguishing qualities Moulding Drying and stacking Brick burning Types of Kilns Firebricks Terra cotta Tile manufacture

Cements, Limes and Mortars—Use of mortar Natural and artificial cements Varieties of limes Hydraulicity Burning Clamps Kilns Plaster Whitewash Distemper Concrete Portland cement

Timber.—Growth of trees Felling trees Classification and properties of Indian and other woods Most suitable woods for particular purposes

CARPENTRY *

(1st year 2nd half session)

Elementary carpentry as applied to Civil Engineering

MASONRY †

(2nd year 1st half session)

Stone Masonry—Ashlar of various sorts Block in course Bond Dressing stone Rubble masonry Safe loads Lewis Dowel Joggle Cramp Template Bedding Moisture Precautions against settlement Rakingbrick Corbel Lintel Jamb Reveal Sill Coping

* Included in the paper on Elementary Engineering

† Included in the paper on Descriptive Engineering



Group I.—CIVIL ENGINEERING.

BUILDING MATERIALS *

(1st year, 2nd half session)

Stone—Selection Characteristics Classification and varieties Quarrying Blasting Dressing Implements

Bricks and Tiles—Classes of bricks and their distinguishing qualities Moulding Drying and stacking Brick-burning Types of Kilns Firebricks Terra cotta Tile manufacture

Cements, Limes and Mortars—Use of mortar Natural and artificial cements Varieties of limes Hydraulicity Burning Clamps Kilns Plaster Whitewash Distemper Concrete Portland cement

Timber—Growth of trees Felling trees Classification and properties of Indian and other woods Most suitable woods for particular purposes

CARPENTRY *

(1st year 2nd half session)

Elementary carpentry as applied to Civil Engineering

MASONRY †

(2nd year, 1st half session)

Stone Masonry—Ashlar of various sorts Block in-course Bond Dressing stone Rubble masonry Safe loads Lewis Dowel, Joggle Cramp Template Bedding Moisture Precautions against settlement Rakingback Corbel Lintel Jamb Reveal Sill Coping

* Included in the paper on Elementary Engineering

† Included in the paper on Descriptive Engineering

Brick Masonry —Types and their uses Bond Closers Bedding Moisture Precautions against settlement Raking back Coping Cornice Blocking course Parapet Eaves course Corbel Lintel Jamb Reveal Sill Drip course Pise walling *Dhaju* walling Hollow masonry Reinforced brick work

Miscellaneous —Retaining walls Depths of foundations Counterforts and buttresses Revetments Construction and sinking of masonry wells Simple masonry dams Technical names of various parts Scaffolding Shears Derrick Gyn Gantry Plastering Painting

EARTHWORK *

(2nd year 1st half session)

Definitions Contracts Stability and properties of soils Measurement and Setting out Instruments used Sections and volumes Drainage Puddling Consolidation Dressing and turfing Rates Lift and lead

FIELD ENGINEERING

(2nd year 1st half session)

Use of Spars —Various knots and lashings and the suitability of each to certain circumstances Coiling and handling of ropes Blocks and tackle Reeving of blocks Use of handspikes and rollers Holdfasts Guys Use and construction of derricks shears gyns and trestles in placing girders or columns in position in buildings or for other similar works

Ground Tracing —General principles (Masonry Manual) Working plans for foundations on level ground and on slopes Trenches with vertical and with sloping sides Laying-out buildings on the ground and similar practical instruction

*Included in the paper on Descriptive Engineering

THEORY OF STRUCTURES (BUILDINGS).**(2nd year, 1st half session)*

Roofs.—Consideration of materials used in the construction of roof trusses Steel and timber Determination of stresses in trusses by various methods Dead loads and wind pressures Factors of safety and working stresses Design of roof trusses Various types of roof trusses and roof coverings, collar beam and hammer beam trusses

Columns and struts.—Use of Euler's, Gordon's, Rankine's, Fidler's, Johnson's and straight line formulae in the design of struts Buckling factor of struts, curves showing comparative strength of struts obtained by various formulae. Choice of sizes of sections Finish of steel work Joints Design of end bearings Methods of fixing and supporting ends Specifications

(2nd year 2d half session)†

Stresses—Application of circle and ellipse of stress and Clapeyron's theorem to design of structures

Cast Iron Columns and Steel Stanchions—Triange and web connections to steel stanchions caps, bases, transverse bracing of columns, etc

Foundations.—Safe pressures Foundations for columns Slab cantilever and grillage foundations Wells Piles

Retaining Walls and Earth pressures.—Rankine's theory. Wedge theory, with corrections Bligh's graphical construction Design of various types of retaining walls in masonry

Tall Masonry and Steel Chimney.—Theory and design with reference to a particular example

Steel and Masonry Reservoirs—Theory and design

* Included in the paper on Buildings

† Included in the paper on Civil Engineering I.

Fire-proof construction—Various methods.

Reinforced Concrete.—Elementary theory of construction of simple beams, columns and slabs

Reinforced Brick-work.—Design of beams, floors and walls

*(3rd year, 1st half session)**

Stresses—Deflection of framed structures and determination of stresses in redundant frames Thomson's principles of similar structures as regards their strength, stability, deflections etc

Influence line diagram.—Influence line diagrams for bending moment and shear for uniformly distributed and irregular loads on trusses built in beams and three pinned, parabolic semielliptic and semicircular arches

Design.—Dome design Building design Consideration of loads on buildings Steel work Girders Design of a residential bungalow with special reference to selection of site construction of walls damp proof courses, water supply, drainage and ventilation

THEORY OF STRUCTURES (BRIDGES).

(2nd year, 2nd half session)

Preliminary.—Selection of site Determination of discharges of rivers from considerations of catchment areas, intensity of rainfall and by zoning Waterway to be provided Depth of scour

Foundation design—Box crate well, pile, continuous masonry or reinforced concrete slab Piers, ordinary and abutment Floors and curtain walls

* Included in the paper Civil Engineering I, Buildings

Superstructure.—Determination by graphical and analytical methods of bending moments due to moving loads
Wind pressures

Design.—Masonry bridges and culverts Plate and web girders Warren and lattice girders Three pinned arches, doubly pinned and rigid Suspension, cantilever, and tubular bridges Steel arched bridges Swing bridges

REINFORCED CONCRETE

(3rd year, 1st half session)

General.—Nature, uses, properties, advantages and disadvantages of Reinforced Concrete over other types of constructions Assumptions made in theory of stresses in Reinforced Concrete beams

Theory and Design—Simple beams, T-beams and slabs for different conditions of loading Shear, bond and diagonal tension, and their nature and evaluation Location of reinforcement Doubly reinforced beams continuous beams, columns piles, slab foundations Simple cantilever and counterfort types of retaining walls Equivalent moments of inertia for Reinforced Concrete sections Theory of elastic deflections and outline of investigation of stresses in Reinforced Concrete arches

ESTIMATING.

(2nd year, 2nd half session)

Taking off.—Rules for taking off quantities in earthwork, masonry, flooring, wood work, mouldings, arches, groined roofs, domes, steel work, and plumber's work

Abstracting.—Calculation of quantities of materials required to be furnished for the completion of work

Rates.—Rates and their analyses. Rates for carriage of materials by different means of transport.

Specifications —Detailed and General

Contracts.—Preparation Contract law.

(3rd year, 1st half session)

Examples —Writing specifications, taking off quantities, abstracting and billing of various designs

HYDRAULICS (ENGINEERING).

(2nd year, 2nd half session)

Irrigation.—General theory of the flow of water Stream line motion Bernoulli's theorem and its application to the venturi meter Flow of water in open channels Chezy, Bazin, Manning and Kutter formulae Application to design of canals and distributaries Silt transportation formulae and their application to design of regime channels Theory of scour as applied to rivers Flow of water through syphons. Falls free and drowned Notches on falls Water cushions Afflux and back water curves Methods of gauging discharges Modules and semimodules Hydraulics and hydrostatics of weirs and dams Standing waves Flood absorption formulae.

Power.—Utilization of water as a source of power Mills Hydraulomats Hydraulics of power plants from source to delivery to turbine

Water-Supply.—Rational and empirical formulae for the flow of water through pipes Limiting, mean and critical velocities Distribution of velocity in pipes and relation between diameter and discharge Economical diameter of pipe lines Initiation and stoppage of motion in a pipe Water hammer and surge chamber Hydraulic gradient Losses on

straight pipes and at bends elbows and tees Time of discharge through long pipe lines, branch mains and multiple supply Flow through bye pass and pipes coupled in parallel Flow through terminal nozzles Meters, syphons Pitot tubes, Pitometers pumps and ram^a Calculation of compensation water Principles of experiments on models Dynamical similarity and dimensional homogeneity

GENERAL CIVIL ENGINEERING.

(2nd year 2nd half session)

Irrigation —Definition of irrigation Conditions necessitating its introduction Principal Indian crops, their seasons, and benefits derived from irrigation Depth of water required to ensure maturity Wells as a source of irrigation Lined and unlined wells Sub soil water reservoirs Duty of wells Area irrigable from a well Canals as a source of irrigation Perennial canals Duty of canal water Depths and running days Supplies utilized and lost Silt and its effect on irrigation channels, its prevention Kennedy channels Designs of channels from Garrett's diagrams Evaporation absorption and percolation Rise in the sub-soil water level Water logging Lining of Canals Special features of inundation canals when necessitated General description location of off take to avoid silting

Water-Supply —Sources of supply Springs wells, rivers and lakes Selection of a suitable source Special features of tube wells Reservoirs Impounded rivers for storage and service Water towers Waterworks Intake settling tanks filters, rates of filtration various types of mechanical filtration, sterilisation of water *CONVEYANCE* and distribution Pipes Fittings and appurtenances *1911-12*

head, service tanks, waste prevention and meters, cisterns, etc.
General types of pumping installations used in India

Roads—History, survey, alignment, formation, foundations Hill roads plains roads, earth roads, bridle paths, gradients curves banking on curves, camber, drainage, various types of wearing surfaces, concrete roads, footpaths, dust prevention, traffic census, collection, consolidation, maintenance, motor transport, types of bridges and culverts

Railways—Land required Earthwork Road crossings Grades and ruling gradients Permanent way and ballast, materials used and functions of permanent way Points and crossings Maintenance of permanent way Plate laying Super elevation Station requirements Light railways Mountain railways Tunnelling

Miscellaneous—Piles and pile driving Sheet screw and interlocking piling Diving operations, reclamations and dredging

IRRIGATION.

(3rd year, 1st half session)

Perennial Canals—Sources of supply River discharges General description of Indian rivers Location and design of headworks in boulder, trough and delta stages of a river Hydraulics and hydrostatics of headworks Weirs and under-sluices Head regulators Supply channels Afflux bunds Temporary diversion bunds Permanent weirs Various types of same Drop shutters Automatic gates Stonew sluice gates

Design and Alignment of Canals.—Attainment of water shed Falls Bridges Regulators Locks Escapes—Roads Distributaries and minors, their design and running Outlets

Cross Drainage Works.—Maximum rate of run off from catchments Inlets Super passages Level crossings
Aqueducts Syphons Reservoirs

Tanks and Reservoirs.—Tanks Flank escapes Outlet sluices Total run off from catchments Reservoirs for storage of water Earthen dams Masonry dams, theory of their stability and design Open weirs Dams with discharge sluices Syphon dams Escapes Flood absorptive capacity of reservoirs

River Training Works —Spurs Groynes Bell bunds
Stream line bunds Mattresses Aprons

SANITARY ENGINEERING.

(3rd year)

Sanitation.—Ideal sites for various types of buildings and their orientation Damp proof courses Air space per person for various classes of buildings Heights of living rooms Ventilation requirements and humidity Sanitary fittings Drainage pipes Special junction pieces Disconnecting and intercepting traps Gully, silt and grease traps Absorption pits Conservancy and water borne systems of domestic sewage Dr Poore's system for country houses Sanitation of special types for buildings such as infectious diseases hospitals meat markets, abattoirs, crematoria, etc Drain testing

Sewerage and Drainage —Separate and combined systems Hydraulics of egg shaped, circular and other special shaped sewers Sewer cross sections, capacity, inclination and velocity in sewers Run off from paved and unpaved areas Calculation of storm water Storm water over flows Sewage lifts and ejectors Manholes lamp eyes, flushing eyes and tumbling bars Sewer flushing and cleansing. Testing of

sewer Pail depots Water flushed latrines and urinals and conservancy latrines for public purposes Land and under drainage The principles and practice of the design of sewerage and drainage systems in India Rules for the preparation of India drainage projects Construction of sewer, Use of sight rails boning rods and templates General lay out Under pinning and shoring Various kinds of pipes Materials used in drainage and sewerage works

Sewage Disposal.—Chemistry of sewage, its classification composition and testing Preliminary processes Selection of sites for sewage disposal work Detritus and grit chambers Screens Essentials in the treatment of sewage Disposal by dilution and by land treatment Simple sedimentation chemical precipitation and bacterial tanks Septic tanks Contact beds and percolating filters Dortmund and Imhoff tanks Hydrolytic tanks Activated sludge system British Ministry of Health requirements and their adaptation to Indian conditions Sewage distributors Sprinklers jets and sprays Sterilisation of effluents Special features in the design and construction of sewage disposal works for Indian villages, towns and cities Sewage pumping installations Dilution drying lagooning and burial of sludge

Disposal of Refuse—Collection of refuse destructors and incinerators

Specifications—Specifications for the construction of sanitary works

CIVIL ENGINEERING DESIGN AND VISITS TO WORKS

(2nd and 3rd years)

This course is intended to supplement the lectures in Theory of Structures General Engineering Irrigation and

Reinforced Concrete The student will be required to design a number of structure under professional supervision and guidance

The course will include the design of masonry buildings, masonry and steel bridges reinforced concrete bridges and building retaining walls masonry dams and aqueducts

In addition to the designs the students will be shown important and instructive works under the supervision of Members of the Staff, who will explain the details of the works visited. The students will then write notes on the works visited and submit them in proper note book.

PROCESS WORK

(3rd year)

Apparatus —General description of materials required where these may be procured and approximate estimate of their cost

Working Room —How an ordinary room may be made suitable for Ferrottype work

Paper —Qualities desirable in paper

Tracings —Tracing cloth and tracing paper. Essential points to be observed in the preparation and preservation of tracings. Suitable inks. Effects of colour washes on resisting ferrottype prints

Chemicals —Chemicals required with formulae for mixing. Precautions to be observed in storing

Printing —Explanation of the action of light on iron salts. The Ferro prussiate and Ferro gallic printing processes. How paper negatives may be made with silver salts from which positive prints, ferro-pressmate or silver, may be made

Developing intensifying reducing trimming and removal of defects. Methods of making additions of lines, figures, etc. by chemical or other means

Practical Course.—A tracing to be prepared specially for reproduction work by each student Three copies of Ferro-gallic and three copies of Ferrottype, from the tracing, to be submitted on papers which are sensitized and of which all the manipulations are to be carried out by the student himself Three copies in each of the above-named processes to be submitted, prepared from commercial ready-sensitized papers; all other manipulations being carried out by the student

ACCOUNTS.

(3rd year 2nd half session)

Explanation of the ordinary terms used in book-keeping as they arise during the course Description and uses of the following —

Cash book, petty cash and imprest, invoice or purchases book, stock book, day or sales book, bills book, the ledger, single and double entry, the journal, balancing the ledger and simple balance sheets

Students will work out examples after the necessary explanations have been given.

Group II. PURE AND APPLIED MATHEMATICS

GENERAL MATHEMATICS.

(Including Arithmetic, Algebra, Geometry, Trigonometry and Mensuration)

No lectures will be provided in these subjects which are included in the syllabus of the entrance examination. However students will be examined on that syllabus supplemented by the following —

Theory and practice of the slide rule

MATHEMATICS *

During the whole session, two lectures and one tutorial period weekly

ANALYTICAL GEOMETRY

(1st year)

No lectures will be provided for the portion of the subject included in the syllabus of the entrance examination. However, students will be examined on that syllabus supplemented by the following course —

Plane Geometry.—The straight Line Law Elementary treatment of hyperbola, logarithmic curve, circular curves cycloid, epicycloid, Witch of Agnesi and cissoid Further properties of the conic sections and the reduction of the general equation of the second degree

Solid Geometry.—Representation of a point Direction cosines, etc Geometry of the Plane and the Straight

* Stress is laid on graphical methods

Line Surfaces of revolution and notions of developable surfaces Elementary treatment of sphere right circular cone and cylinder ellipsoid paraboloid and hyperboloid of one sheet

CALCULUS

(1st year)

Differential calculus — Infinitesimals and limits, definition of function continuous functions their properties and geometrical representation Graphs of elementary and some simple function Limiting value of a function, special limiting inertia

Derived functions Geometrical and physical illustrations Standard forms rules for differentiation inverse circular functions and their derivatives Successive differentiation Applications of a derivative Differentials and application to correction of small errors sign of the derivative Mean value theorem etc Maxima and minima values of a function of a single variable Geometrical applications of the derivative, tangents and normals polar co ordinates points of inflection, curvature, curve tracing

Integral calculus — Integration as inverse of differentiation. Standard forms Rules for integration Integration by substitution and integration by parts Integration by reduction *Integration as the limit of a sum* Problem of areas, connection with inverse differentiation Definite integrals and their properties

Applications — Quadrature and rectification of curves Surfaces and volumes of solids of revolution Centres of gravity Theorem of Pappus and Guldinus Moments of inertia

CALCULUS

(2nd year)

During the first half session two lectures and two tutorial periods weekly during second half session one period weekly

Further applications —Partial differentiation Differentiation of implicit functions Total differentiation and application to small errors Planimetric applications Intrinsic equation of a curve Catenary problems Approximate integration and Simpson's rule

Differential Equations —Formation Equations of the first order and first degree Special cases Integrating factor Linear differential equations of the first order with constant coefficients Clairaut's form

Geometrical, physical and engineering problems including vibrations etc Linear equations with constant co-efficients Particular integrals and their determination in simple cases Applications to maxima and minima Elementary Fourier's series

MECHANICS.

No lectures will be provided for the portion of the subject included in the syllabus of the entrance examination However students will be examined on that syllabus supplemented by the following course

(1st year)

During the first half session, two periods in the laboratory, one lecture and two tutorial periods weekly, during second half session one lecture and one tutorial period weekly

Graphic Statics —Representation and composition etc of forces Funicular polygon and its applications, conditions of equilibrium Graphical determination of stress

in frames Effect of wind loads Method of sections Displacement and Mohr's rotation diagrams

Dynamics.—Relative velocity, tangential and normal accelerations D'Alembert's principle Angular momentum and related problems, motion about a fixed axis, compound pendulum

Hydrostatics—Fluid pressure on surfaces in contact Centre of pressure Laws of flotation and metacentre Simple machines depending on fluid pressure and elementary notions about fluids in motion leading up to Bernoulli's theorem

Mechanical Laboratory.—The majority of the experiments here will be made by the students themselves in accordance with written instructions issued to them The objects of the experiments are to accustom the students to the use of accurate measuring instruments, to illustrate the principles of elementary mechanics, to verify the laws of motion, impact, friction and proportionality of stress and strain, to determine elastic constants for different materials, moments of inertia centres of gravity coefficients of velocity, contraction and discharge for different orifices in hydraulics, and to illustrate the use of section paper in plotting experimental results for the reduction of empirical formulae

APPLIED MECHANICS

(1st year)

During the whole session two lectures and one tutorial period weekly

Theory of Structures.—Analysis of stress and strain Relation between elastic constant Torsion of circular shafts Combined stresses Working stresses in a structural member and determination of its dimensions Elastic limit and ultimate strength Stresses due to repetition of applied loads and

due to dynamically applied loads Bending moment and shearing force diagrams for beams and cantilevers due to dead loads only relation between bending moment and shearing force diagrams Euler's theory of bending of beams fibre stresses, modulus of section, moment of resistance, distribution of shear stress and principal stresses in a beam

*Analysis of combined and conjugate stresses Rankine's theory of earth pressure, depths of foundations and strength of footings Coulomb's theory of earth pressure, Neville Rebahn's modification Application of the principle of virtual work to deflections in framed structures and of finding stresses in frames with one redundant member

Hydraulics—Hydro kinetics, uniform and steady flow, stream line and turbulent motion Bernoulli's theorem

APPLIED MECHANICS.

(2nd year)

During the first half session, three lectures and two tutorial periods weekly, during the second half session one lecture weekly and two tutorial periods weekly till the end of March

Theory of structures.—Bending moment and shearing force diagrams for live loads Analysis of uniform and uniformly varying stresses Stresses due to eccentric loads Stresses in chimneys and masonry dams Line of resistance Stability of masonry structures Stresses in riveted joints and in boiler shells Bending of struts due to direct and eccentric loads Rankine's, Gordon's and other formulae Deflections of simply supported, fixed and continuous beams Clapeyron's theorem of three moments Flexible chains Theory of elastic arches Masonry arches

Hydraulics.—Discharge through orifices and mouth-pieces, and over notches Discharge when the head varies Laws of fluid friction Head lost due to friction, sudden enlargement and contraction and other causes Channel cross-sections of greatest efficiency Diameters of pipes for maximum kinetic energy of jets

Group III SURVEY AND DRAWING.

SURVEY

(1st year 1st half session)

The Level—The use and adjustment of the level
 Different types of levels and their constructional details
 Different types of levelling staves and their markings Their
 relative merits Precautions in using levels Level Field
 books of different kinds Booking and reduction of levels
 Comparative merits of reduction methods Definition of
 terms used in levelling Sources of error Curvature and
 refraction Longitudinal sections and their plotting Allow
 able closing error

Chain Surveying—Equipment Ranging and chaining
 lines Errors in chaining Customary limits of error Reconnaissance
 Selection of stations Keeping of the field
 book Obstacles which obstruct chaining but not ranging
 Obstacles which obstruct ranging but not chaining Obstacles
 which obstruct ranging and chaining Plotting the survey

(Students will carry out and plot an actual chain survey
 in the field)

Compass Surveying—The prismatic compass constructional details and its uses Bearings and angles Magnetic
 and true meridian Variation Designation of bearings
 Comparative merits of whole circle and quadrantal reckoning
 Back bearings Application of compass surveying Local
 attraction Elimination of effects Sources of error Limits
 of precision Adjustment of closing error

SURVEY.

(2nd year, 1st half session)

The Theodolite —The use and adjustment of the theodolite Parts for horizontal measurement. Parts for vertical measurement Details of the theodolite Measurement of angles Repeating angles Requirements of the theodolite Conditions established by adjustment Errors in non adjustable parts Elimination of these errors

Traversing and its Computations —Definition of a traverse Gale's traverse system Conditions fulfilled in a closed traverse Calculation and tabulation of co ordinates Closing error and its adjustment Advantages of plotting by co ordinates Omitted measurements and their calculations

Plane-tableing —Equipment Advantages and disadvantages of plane tabling Maxims for plane tabling Order of working Methods of plane tabling Fixing of position Traversing with the plane table Theory and use of tacheometric plane table Engineering contouring Use of tangent clinometer for contouring

(Students will carry out an actual theodolite traverse in the field and fill in the details of the area with the plane table)

(A three weeks survey camp is held where students undergo instruction in Triangulation and each student independently fills in details and contours the area triangulated with the plane table)

Triangulation —Grades of triangulation Length of base lines Connection of base line to triangulation Selection of stations Reconnaissance Signals Base line measurements Forms of base measuring apparatus Observing angles Zero station Setting to Zero Change of Zero Cautions to be observed in taking a round of angles Conditions favourable for observation Recording observations Intersected points Vertical angles for heights Computation of sides Spherical

excess Computation of heights, single and reciprocal values.
 Supplementary and satellite stations with computations Com-
 putation of third side from two sides and the included angle
 Completion of traverse Convergency correction

SURVEY.

(2nd year 2nd half session and 3rd year, 1st half session)

Curves and Alignments.—Designation of curves Ele-
 ments of curves Setting out by means of theodolite and
 chain Setting out by means of chords and offsets Methods
 of calculation when curves start or end with sub chords
 Tabulation Problems in simple and compound curves
 Diversion curve Vertical curves Curve spiral or transition
 curve Double centre method for laying out a straight line
 Setting out pegs for earthwork Computation of areas of
 cross sections, etc

SURVEY.

(3rd year, 1st half session)

Engineering Surveying.—Surveying requirements when
 making a project for a building, bridge, road, canal, distri-
 butary or railway

Requirements of Surveys for Hydro-electric works.—
 Topographical maps, how to study and read them, areas
 suitable for water power schemes, preliminary reconnaissance,
 catchment areas, rainfall and run off Approximate discharges
 of streams and rivers, capacity of water impounded, hydrogra-
 phical methods of survey, pipe line alignment, tunnel align-
 ment, forebay, transmission line survey Instruments used on
 reconnaissance, preliminary survey and final contour survey

ASTRONOMY.

(2nd year, 2nd half session and 3rd year, 1st half session)

Introduction.—The earth is an astronomical body The
 celestial sphere Apparent path of the sun among the stars

Units of angular measurement Definition Spherical trigonometry Napier's rules of circular parts

Astronomical systems of co-ordinates.—Points and circles of reference Equinoxes and solstices The Right ascension The latitude The astronomical triangle

Time.—Measurement of time Sidereal apparent solar and mean time Equation of time Relation between mean and sidereal time Acceleration and retardation Relation between time and longitude Standard time Right ascension and sidereal time Conversion of time The calendar

Corrections to observations—Aberration, precession, refraction parallax dip semi diameter, and personal equation

Practical.—Use of the Nautical Almanac Determination of time by ex meridian altitude of a star or sun and by equal altitudes of a star Position most favourable for determination of time Determination of latitude by Polaris and circummeridian altitudes Determination of azimuth from ex meridian altitude of sun or star and from Polaris Azimuth from circumpolar star at elongation Use and construction of sundials

DRAWING

(1st year, 1st and 2nd sessions)

The course has been arranged to carry the student step by step in the technique of drawing as a preparation for a course in engineering design and survey mapping

Drawings will be made of building construction details culverts, railway and road plans etc In addition drawings will be made from actual measurements taken of existing buildings Projections and sections of solids

NOTE.—All drawing plates must be done in College during drawing periods and the dates of commencement and completion, with the student's name and rank or standing in the class are to be written on each plate

Group IV. APPLIED SCIENCE.

INORGANIC CHEMISTRY.

(1st year)

Two lectures weekly throughout the session The Syllabus is specially arranged for engineering students

Physical—Nature of physical and chemical change, combustion, chemical affinity, the laws of chemical combination the atomic theory, the gas laws and the kinetic theory of gases vapour density, specific heat, chemical equivalents, atomic and molecular weights, valency, chemical equations, calculations of quantities by weight and by volume, mass action, isomorphism solution, diffusion, dissociation, the properties of colloids, electrolysis and Periodic Law

Non-metals—A general discussion of the properties of the non metals and their more important compounds from the standpoint of the Periodic Law Natural waters, the chemical composition, analysis, bacteriological examination and suitability for various purposes

Metals.—A study of the metals and their more important compounds from the standpoint of the Periodic Law. Metallurgical terms, ores, fuel, refractory materials, furnaces, furnace temperatures, the production of pig iron and wrought-iron a brief description of the more important methods of steel manufacture the chemical composition of pig iron, wrought-iron and steel, the effect of impurities and corrosion and protection of iron and steel The properties and composition of non ferrous alloys, e g , gun-metal phosphor bronze, brass solder, etc

Units of angular measurement Definition Spherical trigonometry Napier's rules of circular parts

Astronomical systems of co-ordinates — Points and circles of reference Equinoxes and solstices The Right ascension The latitude The astronomical triangle

Time — Measurement of time Sidereal apparent solar and mean time Equation of time Relation between mean and sidereal time Acceleration and retardation Relation between time and longitude Standard time Right ascension and sidereal time Conversion of time The calendar

Corrections to observations — Aberration precession, refraction parallax dip semi diameter and personal equation

Practical — Use of the Nautical Almanac Determination of time by ex meridian altitude of a star or sun and by equal altitudes of a star Position most favourable for determination of time Determination of latitude by Polaris and circummeridian altitudes Determination of azimuth from ex meridian altitude of sun or star and from Polaris Azimuth from circumpolar star at elongation Use and construction of sundials

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PRACTICAL CHEMISTRY.*(1st year)*

Two afternoons a week during the first half session, and one afternoon a week during the second half session

The practical work in the chemical laboratory will cover the general principles of qualitative analysis and elementary quantitative analysis. The engineer is not expected to be able to carry out the chemical analyses he requires but he should be able to understand and able also to interpret intelligently the reports received from an analytical chemist. The practical course in chemistry has therefore been drawn up with this object in view

APPLIED CHEMISTRY.*(2nd year)*

One lecture a week during the first half session

General—A short description of the properties of the rarer metals employed in the production of certain kinds of steel and steel alloys cooling curves metallography Decay in timber methods used for preventing decay Quicklime, hydraulic lime cements their chemical composition and preparation the setting and hardening of mortar and cements Paints and varnishes preparation and use of the common pigments, etc Preparation of glass, soluble glass, porcelain pottery and bricks Preservation of structural materials

PHYSICS*(1st year)*

Two lectures and two practical periods a week, during the whole session

General—Commercial and some special methods of measuring density Transmission of pressure in fluids and its application to hydraulic press and transmission of power

for industrial purposes Aneroid and Fortin barometers with their characteristic errors and uses Pressure and vacuum pumps monometers and pressure gauges Hooke's law and its applications

Heat—High and low temperature measurement Practical applications of the expansion of solids liquids and gases by heat Absolute zero Vapour pressure Methods of measuring storage pressure Flash point Determination of height by hypsometer Total heat of steam superheated steam methods of measuring dryness of steam Heat transmission methods of measuring heat insulating properties of non-conductors Ventilation of buildings Newton's and Stefan's laws of cooling Determination of loss of heat from a surface by radiation Elementary discussion of the principles of thermodynamics ideal heat engine cycles, principles of refrigeration entropy Calorific value of fuels

Light—Optical properties and applications of parabolic and cylindrical mirrors cylindrical and prismatic lenses and totally reflecting prisms Spherical and chromatic aberration defects in images due to these and methods of minimising the defects Dispersion and spectrum analysis The study of the sextant telescope microscope rangefinders and eye pieces (Huyghen Ramsden and terrestrial) Polarisation with simple applications

Sound—Acoustic properties of buildings and prevention of echoes Elementary discussion of vibrations

Electricity and Magnetism—Electrostatic unit of quantity potential capacity condenser energy of a condenser, quadrant electrometer, production and propagation of electric waves principles of wireless transmission and reception description of a wireless receiving set, measurement of potential difference, current and resistance by potentiometer Back electromotive force in electrolysis secondary cells, electrical

PRACTICAL CHEMISTRY.

(1st year)

Two afternoons a week during the first half session and one afternoon a week during the second half session

The practical work in the chemical laboratory will cover the general principles of qualitative analysis and elementary quantitative analysis. The engineer is not expected to be able to carry out the chemical analyses he requires but he should be able to understand and able also to interpret intelligently the reports received from an analytical chemist. The practical course in chemistry has therefore been drawn up with this object in view

APPLIED CHEMISTRY.

(2nd year)

One lecture a week during the first half session

General—A short description of the properties of the rarer metals employed in the production of certain kinds of steel and steel alloys cooling curves metallography Decay in timber methods used for preventing decay Quicklime hydraulic lime cements their chemical composition and preparation the setting and hardening of mortar and cements Paints and varnishes preparation and use of the common pigments etc Preparation of glass soluble glass porcelain pottery and bricks Preservation of structural materials

PHYSICS

(1st year)

Two lectures and two practical periods a week during the whole session

General—Commercial and some special methods of measuring density Transmission of pressure in fluids and its application to hydraulic press and transmission of power

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Light.—Optical properties and applications of parabolic and cylindrical mirrors, cylindrical and prismatic lenses and totally reflecting prisms Spherical and chromatic aberration defects in images due to these and methods of minimising the defects Dispersion and spectrum analysis The study of the sextant telescope, microscope rangefinders and eye pieces, (Huyghen, Ramsden and terrestrial) Polarisation with simple applications

Sound—Acoustic properties of buildings and prevention of echoes Elementary discussion of vibrations

Electricity and Magnetism—Electrostatic unit of quantity, potential, capacity, condenser, energy of a condenser, quadrant electrometer, production and propagation of electric waves, principles of wireless transmission and reception, description of a wireless receiving set, measurement of potential difference, current and resistance by potentiometer Back electromotive force in electrolysis, secondary cells, electrical,

mechanical and heat units of energy electro magnetism in instruments electro magnetic induction, magnetisation, permeability and its measurement hysteresis

MINERALOGY AND GEOLOGY.

(2nd year)

Two lectures and one practical period a week during the 2nd half session

Mineralogy —Crystal form and symmetry division into systems with their principal characteristics classification based upon (a) chemical composition (b) physical properties, *e g*, specific gravity hardness cleavage fracture and phenomena relating to light Simple description and identification of rock-forming minerals ores veinstones salts and gems

Geology —Elementary discussion of the geological agents, their influence in effecting geological changes and the records left by them Simple description of the principles of structural geology Sedimentary and igneous rocks Use of fossils Elementary discussion of the general principles of historical geology including a brief description of the geological record of the history of the earth with a short discussion of the chief characteristics of the following divisions —

1	Archæan	3	Mesozoic
2	Palæozoic	1	Tertiary
	5		Post Tertiary

A short description of the stratigraphical geology of India

Practical Course —The object of the practical work is to enable the student to identify the more common ores salts and rock forming materials by the application of simple physical and chemical tests

Group V.—MECHANICAL AND ELECTRICAL ENGINEERING.

DESCRIPTIVE ENGINEERING

(1st year)

One lecture and one tutorial period a week during the 1st half session

One lecture a week during 2nd half session

Boilers—Cornish Lancashire locomotive vertical and water tube boilers Boiler details Safety valves check valves Feed pumps Superheaters Feed water heaters Oil separators Boiler room instruments

Engines—Modern, high and slow speed steam engines Types of gas and oil engines Steam turbines Engine details General arrangement of a power house Auxiliary machinery

Hydraulics—Plunger centrifugal and turbine pumps Pelton wheel inward and outward flow turbines

Machine Tools—General description of lathes drilling shaping and milling machines Arrangement of shafting and belting in a machine shop

THEORY OF MACHINES

(1st year, 2nd half session)

One lecture a week during 2nd half session

Kinematics—Kinematic chains Relative motion Point paths Angular velocity Instantaneous centre Transmission of motion by belts Speed cones Fast and loose pulleys Belt driving between non parallel shafts Friction rollers and toothed wheels Pitch surfaces and lines Kinematic conditions to be satisfied by profiles of teeth Involu

and cycloidal teeth Trains of wheels Epicyclic trains
Reversing mechanisms using toothed wheels

Workshop Course —Two attendances per week throughout first year Practical work in Carpenter's Fitting and Machine Shops Use of modern building tools and materials

THEORY OF MACHINES

(2nd year)

One lecture a week throughout the session

Kinematics —Conversion of reciprocating into rotary motion The slider crank chain Mechanism of a shaping machine Quick return motion Friction Laws of friction as depending on velocity and pressure Friction of greased surfaces Friction of belts on pulleys Transmission of power by belts and ropes Slipper and band brakes Dynamometers

Dynamics of Reciprocating Engines —Piston acceleration and velocity diagrams Angular velocity of connecting rod Forces due to inertia of reciprocating parts Crank effort diagram Fluctuation of energy Function of fly wheels Function of a governor Simple pendulum and loaded governors Effect of friction on governors Governor effect and power

Valve Gears —Simple slide valve Valve diagrams Independent cut off gears Reversing gears and link motions Radial gears Piston valves Corliss and other trip gears Elementary treatment of balancing problems

BEHAVIOUR OF MATERIALS UNDER STRESS

(2nd year)

One lecture a week throughout 2nd term

Elastic limit and yield point Ductile strain Ultimate strength Measure of ductility Effect of shape of test pieces

Resilience Effect of overstrain on elastic limit Hardening and annealing Compression test Live loads Resistance to shock Fluctuating stresses Fatigue and effect of dynamic loading Factor of safety Combined stresses Hardness tests

HEAT ENGINES

(2nd year)

One lecture a week throughout the session

Thermodynamics —Work done by an expanding fluid Adiabatic and isothermal expansion and compression Entropy Air compressors and motors Ideal heat engines Thermal efficiency Carnot constant volume and constant pressure cycles Combustion Evaporation Laws of heat transmission Stationary boilers Gas producers Steam engines Action of steam in cylinders Effect of initial pressure and expansion on economy Governing Steam jacketing and superheating

Internal Combustion Engines —Principles of working Effect of compression Strength of mixture Speed Point of ignition Description of gas and oil engines

Refrigerating Machinery —Principles of working Choice of working substance Comparison of results from different machines

HEAT ENGINES

(3rd year)

One lecture per week for first half session

Steam Turbines —Flow of steam through orifices and nozzles Impact of steam on vanes Classification of steam turbines Determination of vane angles Steam consumption Effect of vacuum super heat and initial pressure Governing of steam turbines

Hydraulic Machinery.—Revision of hydraulics and hydrostatics Impact of water on fixed and moving vanes Turbines, impulse and reaction Description of different types of turbines Determination of vane angles Efficiencies of turbine plant Governing Reciprocating, centrifugal and turbine pumps

MECHANICAL ENGINEERING DESIGN.

(1st and 2nd years)

Design of bolts, cotters, riveted joints, shafting, couplings, bearings, pulleys, spur and bevel gearing, profiles of teeth and cam profiles

ENGINEERING LABORATORY.

Two hours per week throughout 2nd year and 1st term of 3rd year

Material Testing.—Tests to destruction of specimens of cast iron, wrought iron, steel and various alloys in tension, compression bending and torsion Elastic tests of various materials Microscopic examination of metals Effect of heat treatment Riveted joints Shafts and couplings Tests of cements, concrete, bricks and stones

Thermo-Dynamic Laboratory.—Determination of latent heat of steam Calorific values of liquid, solid and gaseous fuels Use of indicator Tests of steam and internal combustion engines, steam turbines, boilers and condensers Gas analysis

Hydraulic Laboratory.—Flow of water through orifices and nozzles Flow over weirs Flow through pipes Effect of bends, elbows and changes of sections of pipes Testing of turbines and centrifugal pumps

ELECTRICAL ENGINEERING.*(2nd year)*

Two lectures and two practical periods each week throughout the second year

General —Electric and magnetic circuits conductivity and insulation of materials measuring instruments, direct current principle of alternating currents in single two and three phase circuits

Electric Machinery —Description principles of working and maintenance characteristics of direct current and alternating current generators and motors, including parallel working

ELECTRICAL ENGINEERING.*(3rd year)*

Two lectures a week and three lectures a week after civil engineering project

General —The course treats of the transmission and distribution of electrical energy and the following points will be considered in detail —

- (a) Transmission of energy, high and low tension systems advantages of the 3 phase system, voltage drop and power factor, posts and insulators and erection of mains, underground and overhead systems contrasted
- (b) Distribution of electrical energy, arrangement for a public supply and the use of feeders
- (c) Transformers, construction, action, working and efficiency, rotary converters and motor generators
- (d) Rectification mercury and valve rectifiers

- (e) Switch gear as applied in modern power stations, protection, boosters, balancers and accumulators
- (f) Lighting, systems of wiring, accessories, distribution and fuse boards, wiring circuits, wiring rules, incandescent lamps and heating appliances, and estimating

Note —A comprehensive course of practical work will be undertaken during the laboratory periods

Group VI. PROJECTS.

The projects will consist of the preparation of detailed designs and estimates for various engineering schemes. There will be one or more minor projects, which will be examined by internal examiners and a major project which will be set and examined by an outside examiner. The maximum marks allotted to the minor project or projects are 450 and to the major 800, making a total of 1,250 in this Group.

Group VII. PHYSIQUE AND GENERAL FITNESS.

General Fitness includes discipline, punctuality, general conduct and ability to control labour, etc., throughout the three years' course. Over 10 per cent of the total marks for the whole three years' course are allotted to this group and the total marks therefore constitute a very fair and true record of the student's intellectual and physical fitness for the work of an Engineer.

The sub heads and the marks allotted are —

Members of the A F I and U T C are marked for	
Military Proficiency	The full marks are 150
Athletics—Proficiency in games and sports	250
General Fitness—Physical and moral fitness for work in the engineering profession	400
Equitation	200
	<hr/>
Total	1,000
	<hr/>

Athletics.—The 250 marks for proficiency in games and sports will be allotted as follows —

Spirit of sport	100
Swimming	30
Athletic sports	30
Games (1) Boating (2) Tennis and Squash Racquets, (3) Football (4) Hockey and (5) Cricket. Any three will carry 90 marks	90
	<hr/>
Total	250
	<hr/>

COURSE OF STUDY AND SYLLABUS

OVERSEER CLASS

1935-36 and till further notice

The chief points kept in view in arranging this Course of Study are to ensure the necessity for steady work throughout the whole course and to co-ordinate the instruction given in each subject so as to lead up to a thorough test of the qualifications necessary for an overseer in the Public Works Department of as high a grade as a College training can produce, special attention being paid to the local conditions of India. This test is represented by the Project and the Final Examinations. Of the marks obtained in the first year 50 per cent are carried on to the second year, so that continuous steady work is necessary for ultimate success.

Terms and Examinations

FIRST TERM—

College Attendances—From October 16 to a variable date in February

Mid Sessional Examinations—Start on the 1st or 2nd Monday in February whichever falls nearest to February 7, or as may be arranged

SECOND TERM—

College Attendances—Start on the Monday following the Mid Sessional Examinations and continue till about the 1st Saturday in June

Revision in Quarters—During Entrance Examinations

Final Examinations—Start about 2nd Monday in June.

The Course of Study extends over two years, and comprises the following subjects grouped under seven heads, to which the following numerical values are assigned —

		Marks
Group	I—Civil Engineering	1,075
„	II—Pure and Applied Mathematics	700
„	III—Surveying	550
„	IV—Drawing	275
„	V—Mechanical and Electrical Engineering	450
„	VI—General	200
„	VII—Project and Design	450
„	VIII—Physique, and general fitness	500
Total		4,200

The marks required at the end of the second year for certificates are as follows —

- I —To obtain the Higher Certificate as Overseer the minimum pass marks of 50 per cent in each group and 60 per cent in the total must be obtained
- II —To obtain an ordinary Certificate (required for all Overseers), the minimum pass marks of 33 per cent in each group and 50 per cent in the total must be obtained

To qualify for return to the College at the end of the first year students are required to obtain 33 per cent of the marks allotted to each group and 50 per cent of the total marks

A student failing to obtain this standard will not be allowed to return to the College unless his failure was due to prolonged absence through sickness, or other circumstances beyond his control, in which cases the sanction of Government will be required for his re-admission contingent on the recommendation of the *Principal*

The examinations, the marks assigned to them and the Time-Tables are shown on the following pages

EXAMINATIONS AND MARKS.

First year.

THEORETICAL.

<i>First term.</i>		<i>Second term.</i>	
	Marks.		Marks.
1. Building Materials	.. 100	1. Civil Engineering I (Building Materials, Earth- work and Carpentry)	.. 100
2. Carpentry ..	.. 100	2. Civil Engineering II (Masonry and Build- ing Construction)	.. 100
3. Earthwork ..	.. 100	3. Elementary Mathematics	100
4. Trigonometry ..	.. 100	4. Mechanics ..	.. 100
5. Mensuration and Geometry	100	5. Surveying ..	.. 100
6. Mechanics ..	.. 100	6. Physical Science	.. 100
		7. Mechanical Engineering	.. 100
	<hr/> 600 <hr/>		<hr/> 700 <hr/>

PRACTICAL AND CLASS WORK.

1. Levels in the field	.. 100	1. Engineering Note-books	50
		2. Mathematics and Me- chanics Tutorial	.. 100
		3. Surveys in field	.. 100
		4. Drawing Course	.. 250
		5. Drawing Examination	.. 50
		6. Workshops ..	.. 100
	<hr/> 100 <hr/>		<hr/> 600 <hr/>
	<hr/> 700 <hr/>		<hr/> 1,300 <hr/>

TOTALS

	Marks.			
First term 700
Second term 1,300
				<hr/>
GRAND TOTAL				.. 2,000
				<hr/>
Carried forward 50 per cent.				.. 1,000
				<hr/>

EXAMINATIONS AND MARKS

Second year.

THEORETICAL

<i>First term</i>		<i>Second term</i>	
	Marks		Marks
1 Roads and bridges	100	1 Civil Engineering I (Building Construction) .	100
2 Estimating	100	2 Civil Engineering II (Bridges and Railways)	100
3 Surveying	100	3 Civil Engineering III (Sanitary Engineering and Water supply) ..	100
4 Accounts	100	4 Civil Engineering IV (Irriga- tion) ..	100
5 Hydrostatics and Hydraulics	100	5 Estimating ..	100
6 Applied Mechanics	100	6 Surveying ..	100
7 Elementary Electrical Engineering	100	7 Applied Mechanics ..	100
8 Mechanical Engineering	100	8 Mechanical Engineering ..	100
	<hr/> 800		<hr/> 800

PRACTICAL AND CLASS WORK

1 Field Engineering	..	50	1 Engineering Note books ..	50
2. Survey Course	..	200	2 Drawing Course ..	100
			3 Drawing Examinations .	50
			4 Process work ..	50
			5 Applied Mechanics Tutorial	100
			6 Civil Engineering Design .	150
			7 Project ..	300
			8 Workshops ..	50
			9 General fitness ..	500
		<hr/> 250		<hr/> 1,350

TOTALS

			Marks.
First term	..	.	1,050
Second term	..	..	2,150
			<hr/> 3,200
Add First Year's marks	..		1,000
			<hr/> 4,200
GRAND TOTAL			..

TIME-TABLES.

TIME TABLES

First term

	Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 year	8 9	..			..	..	..
		Physical Science	Drawing	Civil Engrg	Civil Engrg	Mech Engrg	Survey
	9 10	Civil Engrg *	Drawing	Survey	Drawing	Mathematics	Survey
	10 11	Drawing	Civil Engrg	Survey	Drawing	Drawing	Survey
	11 12	Drawing	Mechanics	Recess	Mathematics	Drawing	Recess
	12 1	Recess	Recess	Mechanics	Recess	Recess	Drawing
	1 2	Workshops	Civil Engrg	Mechanics	Civil Engrg	Mathematics	Drawing
1 year	2 3	Workshops	Civil Engrg		Workshops	Mathematics	
	3 4	Workshops			Workshops	..	..
	8-9	Survey	Survey	Mechanics	Survey	Survey	Estimating
	9 10	Survey	Survey	Civil Engrg	Survey	Survey	Estimating
1 year	10 11	Survey	Survey	Civil Engrg	Survey	Survey	Applied Mech
	11-12	Survey	Survey	Recess	Survey	Survey	Recess
	12 1	Recess	Recess	Drawing	Recess	Recess	Civil Engrg
	1 2	Drawing	Elect Engrg	Drawing	Civil Engrg.	Elect. Engrg	Civil Engrg
	2-3	Drawing	Applied Mech		Mech Engrg	Workshops	.
	3 4	Drawing	Applied Mech	..	Civil Engrg	Workshops	..

Second term						
Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 9	Survey	Drawing	Mech. Engrg	Mechanics	Drawing	Survey
9 10	Survey	Drawing	Mathematics	Drawing	Drawing	Survey
10 11	Civil Eng	Mathematics	Mathematics	Drawing	Drawing	Survey
11 12	Recess	Recess	Recess	Recess	Recess	Recess
12 1	Workshops	Physical Science	Drawing	Civil Engrg	Mechanics	Physical Science
1 2	Workshops	Civil Engrg.	Drawing	Civil Engrg	Mechanics	Civil Engrg *
2-3	Workshops
1st year
2nd year
3rd year
4th year
5th year
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7th year
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94th year
95th year
96th year
97th year
98th year
99th year
100th year

N.B.—Design periods will be under general supervision of P. C. E. (1) and immediate supervision and assistance of the Headmaster.

*Periods marked will be taken under the supervision of P. C. E. (2).

The 2nd Year Project will commence about the 25th April and will continue to about the end of May

The 1st Year Drawing Courses will be submitted on the Saturday previous to the Entrance Examinations in June, and the 1st Year will take up accounts after the Final Examinations, in the morning periods only. The 2nd year Drawing Course will be submitted on the last Drawing period before the Project.

Recess Work will be taken up after the Final Examinations in the 2nd Term of the 1st year in the afternoon period only.

TIME TABLES

First term

	Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1st year	8 9	Physical Science	Drawing	Civil Engrg	Civil Engrg	Mech Engrg	Survey
	9 10	Civil Engrg *	Drawing	Survey	Drawing	Mathematics	Survey
	10 11	Drawing	Civil Engrg	Survey	Drawing	Drawing	Survey
	11 12	Drawing	Mechanics	Recess	Mathematics	Drawing	Recess
	12 1	Recess	Recess	Mechanics	Recess	Recess	Drawing
	1 2	Workshops	Civil Engrg	Mechanics	Civil Engrg	Mathematics	Drawing
	2 3	Workshops	Civil Engrg		Workshops	Mathematics	
	3 4	Workshops			Workshops		
2nd year	8-9	Survey	Survey	Mechanics	Survey	Survey	Estimating
	9 10	Survey	Survey	Civil Engrg	Survey	Survey	Estimating
	10 11	Survey	Survey	Civil Engrg	Survey	Survey	Applied Mech
	11-12	Survey	Survey	Recess	Survey	Survey	Recess
	12 1	Recess	Recess	Drawing	Recess	Recess	Civil Engrg
	1 2	Drawing	Elect. Engrg	Drawing	Civil Engrg.	Elect. Engrg.	Civil Engrg
	2 3	Drawing	Applied Mech		Mech Engrg	Workshops	
	3 4	Drawing	Applied Mech		Civil Engrg	Workshops	

Second term						
	Hour	Monday	Tuesday	Wednesday	Thursday	Friday
1st year	8 9 9 10 10 11 11 12 12 1 1 2 2 3	Survey Survey Civil Eng Recess Workshops Workshops	Drawing Drawing Mathematics Recess Physical Science Civil Engng	Mech Engrg Mathematics Mathematics Recess Drawing Drawing	Mechanics Drawing Drawing Recess Civil Engng Civil Engng	Drawing Drawing Drawing Recess Mechanics Mechanics
2nd year	8 9 9 10 10 11 11 12 12 1 1 2 2 3	Drawing Drawing Drawing Recess Estimating Estimating	Civil Engng Applied Mech Civil Engng Recess C E Design C E Design	Civil Engng.* Civil Engng.* Mech Engrg Recess Applied Mech Applied Mech	Survey Survey Civil Engng Recess Estimating Estimating	Civil Engng Applied Mech Civil Engng Recess Workshops Workshops

N.B.—Design periods will be under general supervision of P. O. E. (1) and immediate supervision and assistance of the Headmaster.

*Periods marked will be taken under the supervision of P. O. E. (2)

The 2nd Year Project will commence about the 25th April and will continue to about the end of May

The 1st Year Drawing Courses will be submitted on the Saturday previous to the Entrance Examinations in June, and the 1st Year will take up accounts after the Final Examinations, in the morning periods only. The 2nd year Drawing Course will be submitted on the last Drawing period before the Project

Process Work will be taken up after the Final Examinations in the 2nd Term of the 1st year in the afternoon period only.



GROUP I.—CIVIL ENGINEERING

BUILDING MATERIALS*

(1st year, 1st half session)

Stone.—Selection Characteristics Classification and varieties Quarrying Blasting Dressing Implements

Bricks and Tiles.—Classes of bricks and their distinguishing qualities Moulding Drying and stacking Brick-burning Types of kilns Firebricks Terra-cotta Tile manufacture

Cements, Limes and Mortars —Use of mortar Natural and artificial cements Varieties of limes Hydraulicity. Burning Clamps Plaster Whitewash Distemper Concrete Portland cement

Timber.—Growth of trees Felling trees Classification and properties of Indian and other woods Most suitable woods for particular purposes

CARPENTRY*

(1st year, 1st half session)

Elementary Carpentry as applied to Civil Engineering.

MASONRY.

(1st year, 2nd half session)

Stone Masonry.—Ashlar of various sorts Block in-course. Bond Dressing stone Rubble masonry Safe loads. Lewis Dowel Joggle Cramp Template Bedding Moisture Precautions against settlement Raking back. Corbel Lintel Jamb Reveal Sill Coping.



GROUP I—CIVIL ENGINEERING

BUILDING MATERIALS*

(1st year 1st half session)

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Brick Masonry —Types and their uses Bond Closers
Bedding Moisture Precautions against settlement Raking back Coping Cornice Blocking course Parapet Eaves course Corbel Lintel Jamb Reveal Sill Drip course Pise walling Dhajji walling Hollow masonry Reinforced brick work

Miscellaneous —Retaining walls Depths of foundations Counterforts and buttresses Revetments Construction and sinking of masonry wells Simple masonry dams Technical names of various parts Scaffolding Shears Derrick Gyn Gantry Plastering Pointing

EARTHWORK

(1st year 2nd half session)

Definitions Contracts Stability and properties of soils Measurement and setting out Instruments used Sections and volumes Drainage Puddling Consolidation Dressing and Turfing Rates Lift and lead

BUILDING CONSTRUCTION

(1st and 2nd years)

Sites Foundations description of different types and calculations Walls strutting buttresses and pilasters shoring and under pinning Arches Chimney stacks details of design Methods of fitting door frames to walls Damp proof courses Columns and stanchions with details of design Staircases with details of design Floors and ceilings Roofs types and different methods of support House fittings Ventilation Reinforced concrete construction calculations with details of design of simple slabs Beams and columns Proportions of cement ballast and sand

ROADS.*(2nd year)*

History survey alignment, formation, foundations Hill roads plains roads earth roads bridle paths, gradients, curves, banking on curves camber drainage various types of wearing surfaces concrete roads, footpaths, dust prevention, traffic, traffic census collection consolidation, maintenance motor transport types of bridges and culverts

RAILWAYS.*(2nd year)*

Land required Earthwork Road crossings Grades and Ruling gradients Permanent way and Ballast Materials used and functions of permanent way Points and Crossings Maintenance of permanent way Plate laying Super-elevation Station requirements Light railways Mountain Railways Tunnelling

BRIDGES.*(2nd year)*

Selection of site Types of bridges Foundations, piers and abutments Descriptions with details of stone, brick, steel and concrete bridges Piles and pile driving Sheet, screw and interlocking piling Diving operations reclamations and dredging

IRRIGATION*(2nd year)*

Well Irrigation —Source of supply Movement of sub-soil water Quantity of sub soil water The Mota Drainage cones Classes of wells Methods of raising water from wells Area protected by wells

Channels.—Duty Design of channels Critical velocity. Silt Spoil banks High embankments Losses by percolation and evaporation Design of outlets Use of discharge tables and charts

Head works.—Brief descriptions of head works Main weirs Heights of weirs Afflux Causes of failure of weirs Description of foundations of weirs Functions of drop shutters Under sluices Object and descriptions of groynes below weirs Systems of lifting sluices Talus below weirs Afflux embankments Canal head regulators Temporary bunds

Drainage crossings.—Brief descriptions

Works —Regulators Falls and their design Rapids Bed bars Escapes

Drainage works.—Importance of draining an irrigated area Silt tanks

Training works.—Their object Dead water Straightening channels Temporary training works Methods of influencing current

SANITARY ENGINEERING.

(2nd year)

PART I.

WATER SUPPLY.

Sources of supply.—Rivers, lakes, springs and wells Purity at source Sampling of water for analysis

Pumping arrangements.—Intakes and unfiltered water pumping stations Filtered water stations Tests Rising mains

Storage —Reservoirs and tanks

Filtration.—Simple sand and mechanical filters Sterilization and chlorination

Distribution —Lay out of simple mains Water supply fittings Calculation of hydraulic mean gradient and hydraulic mean depth Losses of head

PART II

SANITARY ENGINEERING

Systems of collection and removal of refuse —State of sanitation in India Refuse removal

House fittings —Water closets Urinals Sinks Baths House drains Indian adaptations Connexions with sewers Pail depots

Sewers and drains —Lay out Separate and combined systems Materials used in construction Flushing Calculations of sizes and gradients

Public conveniences —Dry pattern latrines Water flushed latrines Urinals

Sewage disposal —Selection of site for outfall Purification by (a) land irrigation (b) intermittents and filtration, (c) Septic tanks and (d) Activated sludge system of sewage disposal

FIELD ENGINEERING

(2nd year)

(i) **Use of Spars** —Various knots and lashings and the suitability of each to certain circumstances Coiling and handling of ropes Blocks and tackle Reeving of blocks Use of handspikes and rollers Hold fasts Guys Use and construction of derricks shears, gins, and trestles in placing girders or columns in position in buildings or for other similar work

(ii) **Ground Tracing** —General principles (Masonry Manual) Working plans for foundations on

level ground and on slopes Trenches with vertical and with sloping sides Laying out buildings on the ground and similar practical instruction

ESTIMATING.

(2nd year)

Taking off —Rules for taking off quantities in earthwork, masonry, flooring wood work mouldings, arches, groyned roofs domes, steel work and plumber's work

Abstracting.—Calculation of quantities of materials required to be furnished for the completion of work

Rates —Rates and their analyses Rates for carriage of materials by different means of transport

Specifications —Detailed and General

Contracts —Preparation Contract law

NOTES ON WORKS

(1st and 2nd years)

Each student will keep a Note book and record in it descriptions and sketches of any materials, manufactures, or works visited by him

Advantage will be taken of every work of repair or construction under execution in or near Roorkee, by careful inspection, both under the instruction of a master and independently Full notes and sketches are to be recorded by students in their Note books, which are to contain no transcripts from their Text books The date of each visit to a work should invariably be recorded at the head of the notes referring to the same

These Note books will be inspected once a month, and marks will be allotted at the end of each term

Group II —PURE AND APPLIED MATHEMATICS.

ELEMENTARY MATHEMATICS.

(1st year)

GEOMETRY.

Students will be expected to be familiar with the subject matter of Hall and Stevens, School Geometry, Parts I—IV. Students will also be expected to solve simple problems and to apply the propositions practically in the solution of easy graphical problems requiring geometrical drawing.

TRIGONOMETRY.

Angles and their measurements. Trigonometrical ratios. The relation between the ratios of complementary and supplementary angles, and of multiple and sub multiple angles. Simple identities and equations. Solution of triangles including problems relating to heights and distances, and those requiring the use of logarithms.

MENSURATION.

Areas of plane rectilineal figures and of segments and sectors of circles and lengths of chords. Surfaces and volumes of cones, frusta of cones, spheres, zones of spheres, pyramids, prisms, cylinders and wedges. Use of the planimeter.

level ground and on slopes Trenches with vertical and with sloping sides Laying out buildings on the ground and similar practical instruction

ESTIMATING.

(2nd year)

Taking off —Rules for taking off quantities in earthwork, masonry, flooring wood work, mouldings, arches, groined roofs domes steel work and plumber's work

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ELEMENTARY MECHANICS.*(1st year)*

Conception of force, and its unit stress and strain.

Elementary laws relating to concurrent forces

Parallelogram and triangle of forces Lami's

theorem Parallel forces Funicular polygons

Moments Centres of gravity Friction Simple

cases of equilibrium Principle of work Simple

machines, namely, lever, screw, pulleys, wheel

and differential pulleys, velocity ratio, mecha-

nical advantage and efficiency Velocity and

acceleration Relative velocity Absolute unit

of force Simple examples on rectilinear motion

including the principles of energy and momen-
tum

ELEMENTARY APPLIED MECHANICS*(2nd year)*

Stress and strain analysis Calculation of cross sectional areas of a tie rod Application of Gordon's and Rankine's formula to find safe stress in a compression member Graphical determination of stresses in simple roof frames including the effect of wind pressure Simple cases of bending moment and shearing force diagrams for cantilevers and simply supported beams Moments of resistance of rectangular beams The manner in which the bending moment is resisted and the flange stresses in I beams Neutral axis and its location Design of wooden beams Stiffness of beams and the calculation from deflection formulae for simple cantilevers and beams under (1) a distributed load and (2) a single concentrated load Graphic testing of retaining walls and arches

HYDROSTATICS AND HYDRAULICS*(2nd year)*

Fluid pressure at a point in a mass of liquid at rest, and on a plane surface partly or wholly immersed Intensity of pressure and whole pressure Centre of pressure in simple elementary cases Atmospheric pressure Barometer Syphon and water pumps Velocity afflux through orifices and over weirs Fluid friction and application of formulae for discharge through pipes and channels to practical cases

Group III —SURVEYING

(1st year)

The Level—The use and adjustment of the level
Different types of levels and their constructional details
Different types of levelling staves and their markings Their
relative merits Precautions in using levels Level field
books of different kinds Booking and reduction of levels
Comparative merits of reduction methods Definition of terms
used in levelling Sources of error Curvature and refraction
Longitudinal sections and their plotting Allow
able closing error

Chain Surveying—Equipment Ranging and chaining
lines Errors in chaining Customary limits of error Reconnaissance
Selection of stations Keeping of the field
book Obstacles which obstruct chaining but not ranging
Obstacles which obstruct ranging but not chaining Obstacles
which obstruct ranging and chaining Plotting the survey

(Students will carry out and plot an actual chain survey)

Compass Surveying—The Prismatic Compass constructional
details and its uses Bearings and angles Magnetic
and true meridian Variation Designation of bearings
Comparative merits of whole circle and quadrantal reckoning
Back bearings Application of compass surveying Local
attraction Elimination of effects Sources of error Limits
of precision Adjustment of closing error

(Students will carry out and plot an actual survey with
the compass)

(2nd year)

The Theodolite —The use and adjustments of the theodolite Parts for horizontal measurement Parts for vertical measurement Details of the Theodolite Measurement of angles Repeating angles Requirements of the Theodolite Conditions established by adjustment Errors in non adjustable parts Elimination of these errors

Traversing and its computations —Definition of a traverse Gale's traverse system Conditions fulfilled in a closed traverse Calculation and tabulation of co ordinates Closing error and its adjustment Advantages of plotting by co-ordinates Omitted measurements and their calculations

Plane-tableing —Equipment Advantages and disadvantages of plane tabling Maxims for plane tabling Order of working Methods of plane tabling Fixing of position Traversing with the plane table Engineering contouring

(Students will carry out an actual theodolite traverse in the field and fill in the details of the area with the plane table

They will also carry out a plane table traverse filling in all details and contouring the area)

Curves and Alignments —Designation of curves Elements of curves Setting out by means of Theodolite and chain Setting out by means of chords and offsets Methods of calculation when curves start or end with sub chords Tabulation Problems in simple and compound curves Curve of deviation Transition curves Simple method for laying out a transition curve

Engineering Surveying —Surveying requirements when making a project for a building bridge road canal distributary or railway

Group IV.—DRAWING.

(1st and 2nd years)

The course has been arranged to carry the student step by step in the technique of drawing as a preparation for a course in engineering design and survey mapping

Drawing will be made of building construction details, culverts, railway and road plans, etc In addition, drawings will be made from actual measurements taken of existing buildings Projections and sections of solids

NOTE.—All drawing plates must be done in College during drawing period and the dates of commencement and completion with the student's name and order of standing in the class are to be written on each plate

Group V —MECHANICAL AND ELECTRICAL ENGINEERING.

WORKSHOPS.

(1st and 2nd years)

The object of the course is to familiarise students with the appearance, structure, and properties of materials commonly used in engineering and with the tools and processes by which they are shaped

Carpentry.—A series of simple exercises will be provided including the preparation of various types of joints used in wood work

Foundry.—The use and preparation of sand moulds and the explanation of foundry methods

Students will be provided with simple patterns and cores from which they will prepare moulds and make castings in white metal, etc

Forge —Use of tools employed in forge work Exercises in drawing down, upsetting, welding, etc

Fitting and Machine Shop.—Use of hand tools in bench-work Cutting tools and their action Characteristic features of simple machine tools

DESCRIPTIVE MECHANICAL ENGINEERING.

(1st year)

Fastenings —Screws bolts, nuts their production and uses Rivets and riveted joints, standard iron and steel sections

Boilers.—Shell, Water-tube and Fire tube Description of the more common types, their erection and inspection Boiler accessories, description and uses Steam pipe lines Arrangement and Lagging

Steam Engines.—Description of the simplest types, including portable engine Engine foundations Erection

(2nd year)

Internal Combustion Engines.—Description of oil, petrol and gas engines Foundations Location of starting and running faults

Hydraulic Machinery.—Laying and anchoring of pipe lines Description of turbines Description of common types of reciprocating and centrifugal pumps

Power Transmission.—Elementary treatment of power transmission by means of belts, gearing, ropes chain and friction drives

Lectures will be illustrated by models, wall diagrams of modern machinery and conducted inspections of examples of the above machinery in the College workshop and laboratories

ELEMENTARY ELECTRICAL ENGINEERING.

(2nd year)

The lightning conductor, parts used in and general rules for erection, function of the lightning conductor Earth resistance of the conductor and method of measuring it Other tests to see that the conductor is in good condition

House Wiring—Principles laid down by Government in "Specifications for internal wiring "

D. C. Power Plants.—Lay-out of simple D C distribution systems Description and working of simple switch-boards Protection devices and knowledge of normal faults in a small power station (The course will not include the theory or manufacture of electrical machinery, but laboratory demonstrations will be given of every principle dealt with in the course)

Group VI.—GENERAL.

ELEMENTARY SCIENCE.

(1st year)

The subject is an elementary one and is taken up with special reference to the Engineering subjects. The elementary physical principles taught are illustrated by numerical examples in tutorial work and the measurement of principal quantities involved is carried out in the physical laboratory by students in a simple manner.

General Measurement—Fundamental units in C G S and F P S systems. Mass density and specific gravity. Buoyancy. Determination of specific gravity by simple methods. Atmospheric pressure and Boyle's Law, Fortin and aneroid barometers, syphon, pressure gauges and water pumps.

Heat—Mercury thermometer and its graduation. Expansion of solids, liquids and gases with simple applications. Charles' law. Units of heat, specific heat, its measurement by the method of mixtures, measurement of specific heat of liquid by the method of cooling. Laws of fusion and ebullition, melting and boiling points, latent heat, evaporation. Transfer of heat by conduction, convection and radiation with simple applications of these methods. Heat and work, mechanical equivalent of heat. Calorific value of coal. Thompson's fuel calorimeter.

Light—Rectilinear propagation of light and shadows. Units of illumination and illuminatory power. Photometers. Laws of reflection and refraction, mirrors and lenses. Elementary Electricity and Magnetism.

ACCOUNTS.*(2nd year)*

Explanation of the ordinary terms used in book-keeping as they arise during the course Description and uses of the following .—

Cash book, petty cash and imprest, invoice or purchase book, stock book, day or sales book and bill book

Students will work out examples after the necessary explanations have been given.

PROCESS WORK.*(1st year)*

Students will be shown the details of both the Ferrogalic and Ferro-prussiate processes and will be expected to make prints from their own tracings on paper sensitised commercially and on paper which they will themselves sensitise. Each student will submit three copies of prints on each kind of paper in both processes

Group VII.—PROJECT AND CIVIL ENGINEERING DESIGN.

The student will be required to design a number of simple structures under professional instruction and guidance

The course will include the design of small buildings, culverts, simple design of beams, columns and slabs in reinforced concrete Steel trusses steel stanchions and small Falls for minors and distributaries

Special stress will be laid on the design of constructional details

The actual Project will consist of the preparation of a detailed design for an engineering scheme complete with report, specifications and estimate Each student will do his work independently

Group VIII.—PHYSIQUE AND GENERAL FITNESS.

(1st and 2nd years.)

Physical Drill Proficiency in games and atheletic sports.
Physical and moral fitness for work in the engineering profession.

The sub-heads and marks allotted to Group VIII Physique and General Fitness are :—

Physical Drill	..	..	..	100
Athletics—Proficiency in games and sports	..	..	..	150*
General Fitness—Physical and moral fitness for work in the engineering profession	..	..	..	150
Equitation	..	..	..	100
				—
			Total	.. 500
				—

Athletics will be marked for Football, Hockey, Tennis and Athletic Sports and such marks will be awarded by the Headmaster in consultation with the Principal. Any three will carry the 150 marks.



COURSE OF STUDY AND SYLLABUS

DRAFTSMAN CLASS

College attendances --During the whole session from 8 a m to 11 a m and from 12 noon to 2 p m

Length of course —Usually three years but it may be less in the case of specially efficient students

Syllabus —

(1st Year)

- 1 Block printing of improved style by quick methods
- 2 Italic printing
- 3 Scales Principles of scales and scaling
- 4 Simple geometrical figures Construction of arches
- 5 Projection of simple solids
- 6 Flat tinting Shades and shadows
- 7 Small culverts with sections
- 8 Railway culvert with sections
- 9 Simple building with sections
- 10 A small modern residence with flat roof
- 11 A small modern residence with pent roof
- 12 Details of doors and windows

(2nd Year)

- 1 Parallel of the orders
- 2 Doors and windows with details from measurement
- 3 A masonry bridge of two or three arches with sections
- 4 First class rest house
- 5 Water tower with details from measurement
- 6 Regulator at the head of a small distributary
- 7 A canal fall with sections
- 8 Application of the orders
- 9 A building from measurement
- 10 Steel construction detail

- 11 Abutment span of steel railway bridge from measurement
- 12 Plotting Field Book of a Chain Survey
(3rd Year)
- 1 Building drawings from rough sketches
- 2 Tracing of No 1
- 3 Large building from measurement
- 4 Tracing of No 3
- 5 One of the New Delhi or other buildings
- 6 Tracing of No 5
- 7 Drawing of a reinforced concrete bridge
- 8 New P W D buildings
- 9 Perspective
- 10 Syphon
- 11 Building for estimating
- 12 Estimating

Ferrottype in all its branches in the second year, to be done out of College hours

A special Instructor is in charge of the Draftsman Class

Marks —No marks are given, but the Principal inspects the whole work of every student at the end of each College Session and decides which students are qualified for promotion to the next year, or for the award of a certificate as a Draftsman

General —The students are trained as simple Draftsmen and not as Computers or Estimators Those who, in three years, do not attain to a proper standard may be required to prolong their course, or to leave the College without a certificate The training of a few selected students in simple estimating in their 3rd Year has been introduced Those who pass this test in Estimating will have an entry on their certificates as "Qualified in Simple Estimating"

Discipline —For discipline the students come under the ordinary College regulations while at the College

PRIZES

CIVIL ENGINEERING CLASS.

THE COUNCIL OF INDIA PRIZE OF Rs. 1,000

To the most distinguished student, who obtains the Honours Diploma in Civil Engineering.

THE THOMASON PRIZE OF Rs. 250.

To the most distinguished student, who obtains the Honours Diploma in Civil Engineering but does not obtain the Council of India Prize

THE RAI BAHADUR KANHAIYA LAL GOLD MEDAL

To the most distinguished Indian student, who does not obtain the Thomason or Council of India prize

THE THOMASON GOLD MEDAL AND BOOKS WORTH Rs. 25.

To the student, who submits the best engineering projects of a certain minimum excellency

THE CAUTLEY GOLD MEDAL.

To the student, who is the best mathematician and who obtains not less than two-thirds of the total marks in Group II

THE CALCOTT REILLY MEMORIAL GOLD MEDAL

To the student, who obtains the highest number of marks in Applied Mechanics

THE GENERAL MACLAGAN PRIZE, BOOKS TO THE VALUE OF
Rs 35

To the student, who obtains the highest number of marks in experimental science Highest marks in Electrical Engineering final year result plus highest marks in Physics 1st year results.

THE SUSHILA AND J MITRA MEMORIAL SILVER MEDAL

To the Indian student who obtains the highest number of marks in chemistry in 2nd year results If there is a tie 1st year results will decide

SILVER MEDALS

for

CIVIL ENGINEERING (THEORY)	DRAWING	HIGHEST MARKS
		IN FIRST YEAR
SURVEYING	HIGHEST MARKS	MECHANICAL ENGINEERING
IN FINAL YEAR		HIGHEST MARKS IN FINAL YEAR

LABORATORY WORK

To the student who obtains the highest number of marks in practical and class work in Physics and Chemistry

OVERSEER CLASS

THE GENERAL MERIT PRIZE OF A SILVER MEDAL AND RS 100

To the most distinguished student who obtains the highest number of marks

THE KEAY MEMORIAL SILVER MEDAL AND RS 18 (APPROX)

To the student who obtains the highest number of marks in Estimating

THE DURGA DAS DUTTA MEMORIAL SILVER MEDAL

To the most distinguished Indian student, who obtains the Higher Certificate and who obtains the highest number of marks

THE RAI BAHADUR KANHAIYA LAL SILVER MEDAL

To the most distinguished Indian student who obtains the highest number of marks

THE RAI BAHADUR KANHAIYA LAL SILVER MEDAL

To the Indian student who obtains the second highest number of marks

THE FAIRLEY MEMORIAL SILVER MEDAL

To the student who obtains the highest number of marks in Applied Mechanics

THE SULLIVAN MEMORIAL SILVER MEDAL

To the student who obtains the highest number of marks in Mechanics

THE PROJECT PRIZE OF A SILVER MEDAL

To the student who submits the best engineering project

SILVER MEDALS

for

MATHEMATICS

DESCRIPTIVE ENGINEERING

SURVEYING

DRAWING

ACCOUNTS

WORKSHOP PRACTICE

To those students who obtain the highest number of marks in these subjects

DRAFTSMAN CLASS

THE GENERAL MERIT PRIZE OF A SILVER MEDAL AND Rs 30

To the most distinguished student who passes out head of the class

THE GENERAL MERIT PRIZE OF A SILVER MEDAL AND Rs 20.

To the student, who passes out second in the class

N B —No prize will be awarded when the competition for it is insufficient or for any other adequate reasons

GENERAL.

In addition to the numerous academic prizes there are many challenge cups and trophies for various events. These are mentioned below —

- (i) The Harcourt Butler Challenge Cup, awarded to the Civil Engineer Class student who, upon completion of his course, obtains the highest number of marks for "Work and Play". The award of the prizes will be determined as follows.

The Cup is awarded under two subheads "Work and Play" "Play" shall be deemed to be that portion of the Course (Civil Engineer Class) called Group "Physique and General Fitness" as follows :

A. F. I and U T C	150	} Grand total of all marks (revised 1929-30) =7,890 *200 (equitation) =8 090
Proficiency in Athletics	250	
General fitness	400	
Equitation ..	200	

Thus "work" may be considered to be 7,090 and play 1,000 marks The marks under "Work" are reduced proportionately to those of "Play" and therefore the divisor is 7 09

Example—Let X obtain a grand total of 5,800 marks of which 800 are in the "Physique and General Fitness" Group, he thus obtains 5,000 in the "Work" Group and his marks for Harcourt Butler Cup will be $\frac{5\ 000}{7\ 09} + 800 = 705 + 800 = 1,505$
Total

- (ii) The Sandes Challenge Cup awarded to the student who obtains the highest number of marks in 'Games and Play'
- (iii) The *Lion Challenge Trophy* awarded to the student irrespective of class who obtains the highest number of marks in the Annual Sports
- (iv) The Runner up Challenge Cup awarded to the student irrespective of class who obtains the second highest number of marks in the Annual Sports
- (v) The Bradshaw Smith Challenge Cup awarded to the student irrespective of class who wins the Cross Country Race
- (vi) The Cross Country Race Challenge Cup awarded to the student irrespective of class who finishes second in the Cross Country Race
- (vii) The Vernieres Challenge Cup awarded to the winning Relay Pace Team irrespective of class at the Annual Sports
- (viii) The McLaren Challenge Cup awarded to the winning Tug o War Team irrespective of class at the Annual Sports
- (ix) The Barnett Challenge Cup awarded to the Overseer Class student who obtains the highest number of marks in the Annual Sports not being a winner of either the Lion Trophy or Runner up Challenge Cup
- (x) The Single Sculls Challenge Cup awarded to the winner of this race in the Annual Regatta Civil Engineer Class only
- (xi) The Officers Challenge Cup Prince of Wales Own Sappers and Miners awarded to the winners of

the Open Double Sculls in the Annual Regatta,
Civil Engineer Class only

- (xii) The Boating Challenge Cup, awarded to the best oar of the 3rd year Civil Engineer Class
- (xiii) The Beer Challenge Cup, awarded to the winners of the Pair Oars Race, Civil Engineer Class only
- (xiv) The Batch Fours Challenge Cup awarded to the winners of the Fours race in the Annual Regatta Civil Engineer Class only
- (xv) The Tennis Singles Challenge Cup awarded to the winner of the annual open Tennis Tournament, irrespective of class
- (xvi) The Tennis Doubles Challenge Cup, awarded to the winners of the annual open Tennis Tournament irrespective of class
- (xvii) The Squash Racquets Singles Challenge Cup, awarded to the winner of the annual open Squash Racquets Tournament Civil Engineer Class only
- (xviii) The Puri Cup awarded to the winners of the annual open Squash Racquets Doubles Tournament Civil Engineer Class only
- (xix) The Mechanical and Electrical Engineer Class Challenge Cup, awarded to the student, irrespective of class who obtains the highest aggregate in the annual Olympic contest with the Officer and British Non commissioned Officers of the King George's Own Sappers and Miners
- (xx) The Vizianagram Cup awarded annually to the best Indian athlete of the 3rd year, Civil Engineer Class
- (xxi) The Shooting Challenge Cup awarded annually to the Section of the Platoon of the University Training Corps which obtain the highest score

TEXT-BOOKS RECOMMENDED.

TEXT-BOOKS RECOMMENDED FOR THE DIFFERENT CLASSES.

Subject.	Civil Engineer Class	Overseer Class
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List of subjects as per Group I (*vide* Syllabus).

Building Materials	Roorkee Treatise	Roorkee Treatise.
Carpentry	Ditto	Ditto
Masonry	Ditto	Ditto
Earthwork	Ditto	Ditto.
Field Engineering	Roorkee Treatise on Masonry ..	Roorkee Treatise on Masonry
Buildings	Roorkee Treatise on Building Construction	Roorkee Treatise on Building Construction
Structural Engineering	Structural Engineering by Huxland and Harby	M E S Handbook, Volumes I & II.
Theory of Structures	Morley's Theory of Structures	..
Bridges	Roorkee Treatise .. Sprague's Stability of Arches Alexander and Thomson's Scientific Design of Masonry arches	Roorkee Treatise.
Reinforced Concrete	Taylor and Thompson, 2 volumes	..
Estimating ..	Roorkee Treatise ..	Roorkee Treatise.
Irrigation and Power	Roorkee Treatise .. Lea's Hydraulics Buckley's Pocket Book.	Ditto
Water supply ..	Roorkee Treatise .. M. E S Handbook, Volume V. Water Works Handbook, by Elm, Weston and Bagert.	Roorkee Treatise.
Roads ..	Roorkee Treatise .. App's Construction of Roads. Whiyatt's Streets, Roads and Pavements	Roorkee Treatise.

Text books recommended for the different classes—(contd.).

Subject	Civil Engineer Class	Overseer Class
List of subjects as per Group I (vide Syllabus)—(continued)		
Railways	Roorkee Treatise	Roorkee Treatise.
Sanitary Engineering	Roorkee Treatise Kershaw's Purification and Sewage Disposal Whyatt's Sewers and Sewerage	Ditto
Surveying	Roorkee Treatise, Parts I and II	Roorkee Treatise, Part I
Process Work	Roorkee Treatise	Roorkee Treatise
Drawing	Roorkee Treatise, Parts I and II	Roorkee Treatise, Parts I and II.
Accounts	Hamilton and Ball's Book-keeping	Hamilton and Ball's Book- keeping
Chemistry	Mellor's Chemistry Jones Junior Course of Prac- tical Chemistry	
Geology and Mineralogy	Hatch's Petrology Gekie's Geology	.
Recommended for general study and reference	Milesworth's Pocket Book of Engi- neering Formulae John Case's Strength of Materials Andrew's Further Problems in the Theory and Design of Structures Johnson's Framed Structures Timoshenko's Strength of Mate- rials Part II Melan's Plain and Reinforced Concrete Arches Scott's Reinforced Concrete Bridges Santo Crump's Tables for Sowers Box's Practical Hydraulics Gibson's Hydraulics Bhgh's Design of Irrigation Works Wadhwa's Bridge Engineering, 2 volumes Wegman's Design and Construc- tion of Dams	

Text-books recommended for the different classes—(contd)

Subject	Civil Engineer Class	Overseer Class
List of subjects as per Group I (<i>vide Syllabus</i>)—(concluded)		
Books recommend ed for general study and re ference	A history of Architecture by Ban ister and Fletcher Prelim and Hills Tunnelling Reports of the Royal Commission on Sewage Disposal Annual Research Reports of the London Metropolitan Water Board, by Sir Alexander Hous ton Clarke's Surveying 2 volumes Accounts Public Works Depart ment Code	
List of subjects as per Group II (<i>vide Syllabus</i>)		
Pure and Apphed Mathematics and Physics	Elements of Co ordinate Geometry, Loney Elementary Calculus, Puri Elements of Statics Puri Dynamics Landon Hydrostatics Jessop and Count Theory of Structures, Morley Infinitesimal Calculus Lamb Hydraulics by Lea Heat for Engineers Darling Tutorial Physics Volume III, Sound Stewart Technical Electricity—Davidge and Hutchinson Dynamics—Ramsay Strength of Materials—Case Strength of Materials—Timo shenko Applied Elasticity—Timoshenko and Lessells Framed Structures—Hool and Kunne Theory of Structures—Woods Modern Framed Structures— Johnson, Bryan and Turneaur	Arithmetic for Schools, Park man and Field. Elementary Alge- bra Hall and Knight Elementary Trigo nometry, Hall and Knight Elementary Men suration Pier point Parts I and II Morley's Building Mechanics Hydraulics for Beginners, Lea.
Books recommended for general study		

Text-books recommended for the different classes—(concl'd.).

Subject	Civil Engineer Class	Overseer Class
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List of subjects as per Group III (C E Class), and Groups III and IV
(Overseer Class) (*vide* Syllabus)

Surveying	Roorkee Manual of Surveying, Parts I and II	Roorkee Manual of Surveying, Part I
Drawing	Roorkee Manual of Drawing, Parts I and II	Roorkee Manual of Drawing, Parts I and II

List of subjects as per Group IV (*vide* Syllabus)

Elementary Science	..	Group VI Class Book of Physics —Gregory and Hadley, Part III IV, VII, and VIII
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List of subjects as per Group V (*vide* Syllabus)

Mechanical Engineer- ing	Low's Heat Engines Robinson's Applied Thermo- dynamics Lee's Hydraulics .. Callendar's Steam Tables Mollier's Diagrams McKay's Theory of Machines Maccall's Continuous Current Engineering Maccall's Alternating Current Electrical Engineering <i>Works of reference</i> Hearton's Steam Turbine Theory and Practice Dalby's Steam Power Dalby's Balancing of Engines Argus Hydraulics for Engineers	Ripper's Elemen- tary Heat Engines Okill's Gas and Oil Engine Operation
Electrical Engineer- ing		
Mechanical Engineer- ing		

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DUPLICATE CERTIFICATES.

For duplicate diplomas and certificates the following charges are levied —

			Rs
Diploma	.	..	24
As Assistant Engineer	..	..	24
As Upper Subordinate	..	..	16
As Overseer	..	..	16
As Lower Subordinate		..	8
As Draftsman	..	..	8

SUBSIDIARY DEPARTMENTS OF THE COLLEGE.

LIBRARY.

The College Library contains over 30,529 volumes, classified as under —

PART I.

Scientific and Professional Works

Class AA	Pure Mathematics	Class F	Mental, Moral and
„ AB	Applied Mathema- tics	„ G	Social Science
„ B	Physics	„ H	Civil Engineering.
„ C	Chemistry	„ I	Surveying and Drawing
„ D	Geology, Minera- logy and Palæon- tology	„ J	Electrical Engineer- ing
„ E	Other Branches of Natural Science	„ K	Mechanical Engine- ering
		„ L	Other Professional Works

PART II.

General Literature, Art, Industries, etc

Class M	Recreations and Amusements	Class S	Commerce and Eco- nomics
„ N	Geography, Ethno- graphy and Tra- vel	„ T	Agriculture Fore- stry and Garden- ing
„ O	History	„ U	General Scientific and Professional Journals and Transactions
„ P	Literature and Philology	„ V	Indian Government, Publications
„ Q	Arts and Trades		
„ R	Fine Arts		

SUBSIDIARY DEPARTMENTS OF THE COLLEGE.

The library is free to all gazetted Government officers and other outstation residents in special cases can obtain books on application

There is a printed Catalogue, and a Supplement is issued every year, which can be obtained on application to the College office

THE COLLEGE REGISTER OF EMPLOYMENT.

The College registers the names of, and supplies employers with the names of approved engineers, upper subordinates, overseers, lower subordinates and draftsman.

THE FOLLOWING INSTITUTIONS ARE ALSO MAINTAINED IN CONNEXION WITH THE COLLEGE.

1. CIVIL ENGINEERING MODEL ROOMS	7 DEHRA DUN CONTINGENT, AUXILIARY FORCE, INDIA, ROORKEE DETACHMENT.
2 METEOROLOGICAL OFFICE	
3 WATER-WORKS	8 NO 15 PLATOON, 3RD UNITED PROVINCES BAT- TALION, UNIVERSITY TRAINING CORPS, INDIAN TERRITORIAL FORCE
4 COLLEGE DAIRY.	
5 COLLEGE DISPENSARY.	
6. SPORTS AND ATHLETIC CLUBS	

List of Donations to the Thomason College for prizes and other Miscellaneous purposes

Year	Names	Rupee
1851	Subscribers to 'he Thomason Testimonial Fund	2 500
"	Sir Probyn T Cautley, K C B	2 000
1856	Lieut T Wright 46th N I	100
"	" W Marshall 48th N I	100
"	" T E Dickens, Artillery	100
"	" G Ballie Artillery	100
"	Ensign H E Wish 26th N I	100
"	Lieut E L Earle Artillery	100
"	" E Smalley, 36th N I	100
"	" C B Wish, 14th Light Dragoons	100
"	" A B Melville, 67th N I	100
1860	" E C Garstin 29th N I	100
"	" E S Wood 93rd Highlanders	100
1862	Capt W H Mackesy 70th Highlanders	100
1864	Lieut E C Shepherd, General List, Infantry	100
1865	" E W Samuels " "	100
"	" B J Parsons 23rd N I	100
"	H H the Maharaja of Kashmere	500
"	Lieut J E Sandeman, General List Infantry	100
"	Capt F G S Parker 54th Regiment	100
"	" I D M Brown, VC, 101st Regiment	100
"	Lieut L Wavell 22nd N I	100
"	Peter Keay Esq	120
1867	Lieut W S Lillington, MA, 7th Hussars	200
1868	" E C Elliston, 58th Regiment	100
1869	Colonel R MacLagan, RE (for 'MacLagan Prize Endowment)	1 000
"	Isser Chandar Sirlar	50
"	Sergt W Snelcar RE	50
"	G W Dowsworth Esq	100
"	J Mole, Esq	50
"	J Lyons, Esq	50
"	S Fraser Esq	20
"	Sergt P Kelly	50
"	Lieut G Nolan	100
"	J Farrs Esq	20
"	Lala Bhan Lal	100
"	C Chisholm Esq	30
"	H Mitchell Esq	20

LIST OF DONATIONS

Year	Names	Rupces
1869	T Gray Esq	25
,	J Southon Esq	25
	Sergt A Forsyth	30
	J H Chapman Esq	50
	G McArthur Esq	50
	J Gillan, Esq	25
	W Phillips Esq	300
	C Collogher Esq	250
1870	Rai Bahadur Kanhya Lal (<i>for Kanhya Lal Prize endowment</i>)	100
	Capt C E D Branson 37th P N I	100
	Dr Murray Thomason M D F R S E	200
1872	Lieut G W Martin 88th Regiment	100
1873	W W Hocks Esq (<i>to Engineer Students Mess</i>)	100
	E Hodges Esq	100
	H H the Maharaja of Vizianagram	1 000
1874	R B Smart Esq (Rev Sur) (<i>for Surveying Prize</i>)	100
	R W L Hawkins Esq (<i>to Engineer Students Mess</i>)	100
	Lieut W T McLaughlin 48th Regiment	100
	Reginald H McLaughlin Esq	50
1875	V B Paterson, Esq	(to Engineer students Mess)
	S Jarman Esq	
	F J McLaughlin, Esq	
	R L Campbell Esq	
	R W L Toors Esq	
	A E Adie Esq	
	Lieut S M Maycock R E (<i>for Mechanical Prize</i>)	50
	R B Smart Esq (Rev Sur) (<i>for Surveying Prize</i>)	100
	W A Fraucke Esq Assistant Superintendent Canal Foundry (<i>to College Recreation Fund</i>)	50
1876	Lieut S M Maycock R E (<i>for Mechanical Prize</i>)	50
	Capt Allan Cunningham R E (<i>for Applied Mathematics Prize</i>)	50
	Subscribers to Kcay Memorial (balance of subscriptions after erecting Tablet)	1 000
1877	H H the Maharaja of Jummoo and Kashmere	1 000
	Raja of Rutlam	100
	Captain Allan Cunningham R E (<i>for Applied Mathematics Prize</i>)	50
	Rai Bahadur Kanhya Lal (<i>to change the Prize Endowment of 18 0 to the Rai Bahadur Kanhya Lal Gold Medal similar to Thomason Medal</i>)	1,000
	Lieut S M. Maycock, R.E. (<i>for Mechanical Prize</i>)	50
	Colonel J G Medley R E (<i>yearly since 1863 at Rs 50</i>)	750
	Major A. M. Brandreth, R.E. (<i>for Note Books and English Prizes</i>)	50
	J T Farrant Esq (<i>to Engineer Students Mess</i>)	100

Year	Names	Rupess
1878	Colonel J G Medley R E (for Civil Engineering Prize)	50
"	Lieut S M Maycock (for Mechanism Prize)	50
	Major A M Brandreth R E (for Note Books and English Prizes)	50
"	Anonymous from Jhansi	100
1880	Colonel J G Medley R E (for Civil Engineering Prize)	50
	Lieut S M Maycock R E (for Surveying Prize)	50
"	Major A M Brandreth R E (for Note Books English and Romanised Urdu Prizes)	70
	Babu Krishna Chandra Banerji (for Mathematics)	50
1881	Colonel J G Medley, R E (for Civil Engineering Prize)	50
	Lieut S M Maycock R E (for Surveying Prize)	50
	Major A M. Brandreth R E (for Note Books English and Romanised Urdu Prizes)	70
	W P Housden Esq (to Engineer Students Mess)	100
1882	Colonel J G Medley, R E (for Civil Engineering Prize)	50
	Lieut Col A M Brandreth R E (for Note Books English and Romanised Urdu Prizes)	70
	Lieut J H C Harrison, R E (to Engineer Students Mess)	100
	J H C Harrison R E (for Surveying Prize)	50
1883	Colonel J G Medley R E (for Civil Engineering Prize)	50
	Lieut Col A M Brandreth R E (for Note Books English and Romanised Urdu Prizes)	70
	Lieut J H C Harrison R E (for Surveying Prize)	50
1884	Lieut Col A M Brandreth R E (for Civil Engineering Note Books and English Prizes)	100
1885	Lieut Col A M Brandreth R E (for Civil Engineering Note Books and Estimating Prizes)	100
	Lala Bihari Lal (for Language Prize)	15
1886	Lieut Col A M Brandreth R E (for Civil Engineering Note Books and Estimating Prizes)	100
"	Lala Bihari Lal (for Language Prize)	15
1887	Lieut Col A M Brandreth R E (for Civil Engineering Note Books and Estimating Prizes)	150
	Lala Bihari Lal (for Language Prize)	15
"	Rai Bahadur Kanhya Lal to found Silver Medals for Indians of Upper and Lower Subordinate Classes	1 000
1888	Lieut Col A M Brandreth R E (for Civil Engineering Note Books and Estimating Prizes)	100
	Lala Bihari Lal (for Language Prize)	15
"	Rai Bahadur Kanhya Lal	100
1889	Lieut Col A M Brandreth R E (for Civil Engineering Note Books and Estimating Prizes)	100
"	Lala Bihari Lal (for Language Prize)	15
1890	Lieut. Col A M Brandreth R E (for Civil Engineering Note Books and Estimating Prizes)	

Year	Names	Rupees
1890	Lala Bihari Lal (for Language Prizes)	15
1891	Lieut Col A. M. Brandreth, R.E. (for Civil Engineering, Note Books and Estimating Prizes)	100
"	Rai Bahadur Kanhya Lal (for Language Prize)	15
1892	Colonel F. D. M. Brown, V.C. (for Civil Engineering Prize)	50
"	Rai Bahadur Bihari Lal (for Language Prize)	15
1893	Major J. Clibborn (for Civil Engineering Prize)	50
"	Rai Bahadur Bihari Lal (for Language Prize)	15
1894	Major J. Clibborn (for Civil Engineering Prize)	50
"	Rai Bahadur Bihari Lal (for Language Prize)	15
1895	Major J. Clibborn (for Civil Engineering Prize)	50
"	Rai Bahadur Bihari Lal (for Language Prize)	15
1896	Lieut Col J. Clibborn (for Civil Engineering Prize)	50
"	H. E. the Prime Minister of Nepal (for a Tower Clock)	2,500
1897	Lieut Col J. Clibborn (for Civil Engineering Prize)	50
1898	Lieut H. B. D. Campbell, R.E. (for Civil Engineering Prize)	12
"	Rai Bahadur Govind Jas (for English)	16
1899—1900	Lieut. Col. J. Clibborn (for Civil Engineering Prize)	12
1906—1922—1924	Babu Amar Nath Dutt, B.A., LL.B. (for best Indian student obtaining Sub Engineer's certificate, U.S. class)	15
1903—1917	Laja Ram Sahai (for Language Prize, L.S. class)	15
1908	Members of the Fairley Memorial Prize Committee (for Applied Mechanics, U.S. class)	500
1909—1912	Sirdar Kishan Singh (for Drawing, Mechanical Apprentices class)	11
1909	Calcott Reilly Memorial Fund has been transferred to this College on the abolition of the Royal Indian Engineering College, Coopers Hill, England (Gold Medal for Applied Mechanics)	1,800
"	Donations from Ghulam Nabi and other P.W. Subordinates to found the Sullivan Scholarship Medal Endowment Fund for the Lower Subordinates of this College	2,000
1911—1917	Rai Nathu Mal Sahib (for best senior Indian student, U.S. class)	95
1911—1914	Srjant Hem Chander Baugh (for Natural Science, Mechanical Apprentices class)	15
1921—1923	Sir Sidney Crookshank for cricket	30
1922—1927	Sashida and J. Mitter Memorial Silver Medal	15
1923-24	Babu Amar Nath Dutt, B.A., LL.B. (for best Indian student in Civil Engineer class in Civil Engineering Division)	15
1923	H. E. Sir Edward MacLagan's prize (for best Civil Engineer class student in Civil Engineering Design)	100
1924—1932	Babu Amar Nath Dutt, B.A., LL.B. (for best Indian Student Obtaining Higher Certificate in Overseas Class)	15
1932	G. Lacey, Esq. (for the best performance in the Thomasonian Society)	25

RULES OF THE ADVISORY COUNCIL, THOMAS- SON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

Re constituted under G O No 556G/AV-555-1932, dated June 2, 1933, copy received with Director's of Public Instruction, letter No G/1315, dated June 2, 1933 Rules approved in Director's of Public Instruction, U P letter, No G/1675, dated July 26, 1933

1 The function of the Council will be to advise Government on questions of policy, organization finance, staff, buildings, equipment, the formation or re-constitution of classes, curricula, rules of admission and any other subject connected with the College on which Government may require its advice As the Council will be closely associated with the College and will visit it periodically, it will also be in a position to take the initiative in suggesting improvements and reforms in respect of any of the above matters

2 The Council will consist of —

- (1) The Chief Engineer Public Works Department, Irrigation Branch
- (2) The Chief Engineer Public Works Department, Buildings and Roads Branch
- 3) The Director of Public Instruction United Provinces
- (4) & (5) Two non official members elected by the Legislative Council, United Provinces
- (6) A representative of the United Provinces branch of the Institution of Engineers India
- (7) A representative of the Punjab Government nominated by the Punjab Government

(8) A representative of University Education, nominated by the United Provinces Government

(9) A representative of the Institution of Civil Engineers, London

(10) The Principal, Thomason College, Roorkee

3 The senior of the two Chief Engineers shall be the President of the Council

4 The Principal of the College will be *ex officio* Secretary of the Council and shall have a right to vote

5 The term of office of non official members of the Council shall be for a period of three years, provided that a member shall cease to be a member of the Advisory Council when he ceases to be a member of the body which he represents, a new election shall be held by each new Legislative Council at its first session, and, at the same time, other bodies shall be required to make their nominations

6 The committee shall meet at least once a year at Roorkee on a date to be fixed by the Principal after informal consultation with the President. The Council may also hold any other meetings whenever it appears desirable to do so, at any place in the United Provinces to be fixed by the President

7 Notice of the time and place of meeting will be issued to each member by the Secretary at least 6 weeks in advance

8 Four members of the Council, exclusive of the Principal, who must always be present, shall constitute a quorum

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" " " " " "

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I should the President consider the
tent to discuss the issue in point
is opinion of the other members

9 The Secretary of the Council may in urgent and other cases, submit matters for the opinion of the Council by correspondence

10 The proceedings of the Council after approval, will be written in a consolidated form and a typed copy of the same will be circulated to all the members and one copy submitted to Government through the Director of Public Instruction for orders

11 The Council is authorized to call in experts for the consideration of any question on which experts' advice is required, and to recommend the appointment of Sub Committees to deal with particular questions or with special branches of the work of the College Before consulting any expert whom it is proposed to remunerate for his advice, the Council should obtain the sanction of Government to the payment of such remuneration

12 The official members when attending meetings will draw travelling allowance under the rules The non official members will each be paid the ordinary travelling and daily allowance admissible to an officer of the first class

13 It is expected of members that they will from time to time, pay personal visits of inspection to the College and thus keep in touch with its circumstances, its work and its needs and aspirations



RULES OF THE BOARD OF STUDIES, THOMAS- SON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

Approved by the Government, vide Director of Public Instruction letter, No G/2423 dated October 23, 1925 and Director's Public Instruction letter, No G/3358, dated September, 1934

1 The members of the Board will include the Principal, all Professors and Assistant Professors of the College The Principal will be *ex officio* President

2 The meetings of the Board will be convened by order of the President

3 The Secretary will be elected from among the members of the Board

4 The Secretary will circulate, before each meeting, a copy of the Agenda together with the necessary papers relating to subjects entered for discussion

5 Any member, with the previous sanction of the President, may bring forward for discussion any subject of an academic nature pertaining to the College work

6 The Board of Studies will be an Advisory Body, it will not exercise any control over discipline but in consultation with the President will assist him in —

(a) The moderation of examination papers for the College final and sessional examinations

(b) The scrutiny of all sessional and final pass lists of the Civil Engineer and Overseer Classes, and the award of grace marks under the procedure as

STANDING ORDERS

onal Assistant to the Principal Such furniture is not to be removed from the rooms, or used for any other purpose without permission Special furniture will be provided for the various camps Students of classes, other than the Civil Engineer Class, will make their own arrangements for furniture

5 All students have to engage their own servants and immediately upon appointment have to report the names of same on the correct form—obtainable from the College office—to the Personal Assistant to the Principal The Personal Assistant maintains a black list of servants and if any student has appointed a servant, whose name is on the black list, the student will have to dismiss such servant at once and appoint another following the same procedure Without the Principal's sanction no unauthorised persons servants or guests will be permitted to reside in the hostels or servants' quarters or to enter them after nightfall The wages of private servants must be paid by the 10th of each month following that for which they are due Students are required to take a receipt for every payment made by them to their servants, whether such payments relate to wages or other accounts

6 All information regarding text books, courses of study, dates of examinations attendances etc., will be found in the College Calendar and pamphlets of the courses of study and syllabi of the various classes

7. Students are reminded that this is a College for young men and not a school for boys Though all needful assistance will be given to those really anxious to work, it is entirely on their own exertions that their success must depend, and in cases of failure they will only have themselves to blame They are, however, specially warned against idleness

in their first year under the expectation that they can pick up in the second or third. The course is so laid out, that continuous application is required the whole time. Students are reminded that if they fail to make sufficient progress in their studies, or fail to pay all College dues* on demand, they are liable to be suspended or removed from the College at any time.

The guardian of any student so suspended or removed will be held responsible for the payment of any debts whatsoever, which may have been contracted while the student was in the College. Although every precaution is taken to prevent students from running into debt, the College authorities are in no way to be considered responsible for such debt.

8 All students will attend the College regularly for studies at the hours laid down in the time tables and for outdoor duties at the times prescribed by the Officer in charge of their class or their Professors, Lecturers or Instructors. *No student may be absent from his quarters in the College lines without leave after 9 p.m. during the first term of any session, and 10 p.m. during the second term of any session, or before sunrise.* The punishment for breaking this rule will be of the severest description. To enable the authorities to check this rule no doors should be locked at the times specified.

NOTE —(*) The word College * Dues includes —

- (i) College fee
- (ii) Rent and co-servancy
- (iii) Rent of College furniture
- (iv) Electric light charges
- (v) Recreation fund subscription and cost of articles purchased from recreation stores
- (vi) All dues in connection with Engineer Class Club
- (vii) All dues of College Dairy, College shoemaker, College shopkeeper, College tailor, College sweet seller and College stores

STANDING ORDERS

Students are permitted to sleep immediately outside in front of, their quarters during the hot weather

9 All smoking, spitting whistling or making any loud noise in the College classrooms lecture theatres laboratories or corridors etc is strictly prohibited Students should be careful to do nothing which may interrupt or distract others at work

10 No debts except those duly authorised by the Principal are allowed to be contracted All articles purchased except those supplied from the College Store must be paid for in cash Students are strictly cautioned against all irregularities in money matters Flagrant cases which tend to bring discredit on the College are liable to result in severe penalties being imposed upon offending students

11 All dues from students recoverable by the College whether payable to Government or to private funds persons or bodies must for every month be punctually discharged in full before the 21st of that month failing which the students will be fined marks suspended or removed at the discretion of the Principal

12 The Principal and the Officers in charge of classes will always be glad to give any help and advice in their power and students are earnestly requested to apply to one or the other in any case where they are in doubt as to the right course before taking action Students should consult the Officers in charge of their classes for advice before referring the case to the Principal see order No 14

13 Any case of personal violence by one student to another or by a student to any other person will be punished severely A student is never to take the law into his own hands but is to report any grievance direct to the Officer in charge of his class for enquiry

14 Students wishing to see the Principal should apply for permission through the Officer in charge of their class. Direct application to the Principal is contrary to orders. Petitions signed by a number of students are not allowed. Any matter affecting a class, or a number of students should be brought to notice by the senior student concerned.

15 Students are strongly recommended to take a fair amount of bodily exercise regularly, too much poring over books is very apt to muddle the brain and the active duties of the Engineering profession require a man to be as well trained physically as mentally to enable him to discharge them properly. Marks are allotted for games etc.

16 The Library is open daily at the hours specified in the Library rules. Students are invited to avail themselves of it. The periodicals and papers placed on the Reading Room tables for general use are not to be removed from the rooms. Loud talking in the Library or Reading Rooms is strictly prohibited.

17 Students are forbidden even though possessing a licence to bring firearms into their quarters. Firearms may, with the permission of the Principal be stored in the College armory. No student is to bring any firearms to the College without first obtaining the Principal's permission.

18 Students may keep dogs but they must not be left loose if unattended. Dogs must invariably be chained up at night. All dogs must be registered and numbered in a register kept by the Personal Assistant to the Principal and must wear a collar and a special badge. Any dog found within the lines without a collar and badge is liable to be shot. The Personal Assistant will supply the necessary badges on payment. These badges may be returned at any time when not needed and payment will be refunded.

STANDING ORDERS

Students are permitted to sleep immediately outside, in front of, their quarters during the hot weather

9 All smoking, spitting, whistling or making any loud noise in the College classrooms, lecture theatres, laboratories or corridors, etc., is strictly prohibited. Students should be careful to do nothing which may interrupt, or distract others at work

10 No debts except those duly authorised by the Principal are allowed to be contracted. All articles purchased except those supplied from the College Dairy must be paid for in cash. Students are strictly cautioned against all irregularities in money matters. Flagrant cases which tend to bring discredit on the College, are liable to result in severe penalties being imposed upon offending students

11 All dues from students, recoverable by the College, whether payable to Government or to private funds persons or bodies must, for every month be punctually discharged in full before the 21st of that month failing which the students will be fined marks suspended or removed at the discretion of the Principal

12 The Principal and the Officers in charge of classes will always be glad to give any help and advice in their power, and students are earnestly requested to apply to one or the other in any case, where they are in doubt as to the right course, before taking action. Students should consult the Officers in charge of their classes for advice before referring the case to the Principal, see order No 14

13 Any case of personal violence by one student to another, or by a student to any other person, will be punished severely. A student is never to take the law into his own hands, but is to report any grievance direct to the Officer in-charge of his class for enquiry

14 Students wishing to see the Principal should apply for permission through the Officer in charge of their class. Direct application to the Principal is contrary to orders. Petitions signed by a number of students are not allowed. Any matter affecting a class, or a number of students, should be brought to notice by the senior student concerned.

15 Students are strongly recommended to take a fair amount of bodily exercise regularly, too much poring over books is very apt to muddle the brain and the active duties of the Engineering profession require a man to be as well trained physically as mentally to enable him to discharge them properly. Marks are allotted for games, etc.

16 The Library is open daily at the hours specified in the Library rules. Students are invited to avail themselves of it. The periodicals and papers placed on the Reading Room tables for general use are not to be removed from the rooms. Loud talking in the Library or Reading Rooms is strictly prohibited.

17 Students are forbidden even though possessing a licence, to bring firearms into their quarters. Firearms may with the permission of the Principal be stored in the College armoury. No student is to bring any firearms to the College without first obtaining the Principal's permission.

18 Students may keep dogs but they must not be left loose if unattended. Dogs must invariably be chained up at night. All dogs must be registered and numbered in a register kept by the Personal Assistant to the Principal and must wear a collar and a special badge. Any dog found within the lines without a collar and badge is liable to be shot. The Personal Assistant will supply the necessary badges on payment. These badges may be returned at any time when not needed and payment will be refunded.

STANDING ORDERS

Students are permitted to sleep immediately outside in front of, their quarters during the hot weather

9 All smoking, spitting, whistling or making any loud noise in the College classrooms lecture theatres laboratories or corridors etc is strictly prohibited Students should be careful to do nothing which may interrupt or distract others at work

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13 Any case of personal violence by one student to another, or by a student to any other person, will be punished severely. A student is never to take the law into his own hands but is to report any grievance direct to the Officer in charge of his class for enquiry

should be taken not to splash ink on the tables walls or floors or to deface the furniture of class rooms and lecture rooms in any way by writing or cutting

25 Students wishing to have baggage or parcels brought to the College from the Railway Station should give notice to the Personal Assistant to the Principal before 2 p.m. on the day the goods arrive. This notice should be in writing giving the number of their quarters and a detail of the baggage or parcel. The railway receipt signed and the amount due for railway carriage should be sent with the notice.

26 All students on meeting the Principal or any member of the staff of the College will salute them in a respectful manner. All students will address members of the College teaching staff Europeans and Indians as Sir.

27 In any class the student standing first in order of merit will be the senior. The senior of a class is responsible for reporting promptly to the Officer in charge of his class any unusual occurrences or circumstances connected with his class. He will take charge of survey parties and arrange all details in camps.

28 Fruit on trees on the College Estate is not to be plucked by students or their servants.

29 Two guest rooms one for the Civil Engineer and the other for the Overseer Class are available for the use of the relatives of students on application to the Personal Assistant to the Principal who will be glad to help students in accommodating any relatives provided reasonable timely notice is given to him.

30 Students are not allowed to be members of outside societies nor are they allowed to join in discussions on public

STANDING ORDERS

Dancing, singing parties and the playing of musical instruments in the open, are not allowed without the special sanction of the Principal in every case

20 Students are warned to be very careful to have their quarters securely locked when they are absent from them. Any case of theft of the property of a student or of Government must be reported immediately to the Officer in-charge of the class to ensure prompt and effective investigation. If after College hours the theft should be reported to the Hostel Superintendent who will take immediate action and also report to the Officer in charge of the class.

21 All students are expected at all times to be dressed in a neat and tidy manner whether in or out of class and must not appear in class in flannels or shorts used for games etc without special permission. There will be no objection to students wearing khaki shorts and long stockings during the summer viz from April 1.

22 Students should bear in mind that this is a competitive College and that any means tending to give any one student an unfair advantage must render the competition unequal and in time reduce the value of diplomas and certificates granted and affect the good name of the College. For any breach of this rule severe action will be taken probably expulsion.

23 Private servants are not allowed to enter the class rooms. Drawing boards etc should be taken from and made over to servants in the verandah by the student to whom they belong. Private servants are not allowed to loiter in the verandah of the College and students are expected to see that this rule is enforced.

24 Students must occupy seats at the numbered tables in the order of their standing in the class. Particular care

If the leave be sanctioned, the Officer in charge of the class will note in his records the address of the student while on leave. The student will then, before proceeding on leave, show his sanctioned leave application form to his Hostel Superintendent who will note in his records the address of the student while on leave and sanctioned times and dates of start and expiration of the leave. The student upon return from leave will report his return to his Hostel Superintendent handing over his application form, which the Hostel Superintendent will return to the Officer in charge of the class concerned. If the student has overstayed his leave the Hostel Superintendent will so report to the Officer in charge of the class when returning the application.

In ordinary circumstances all applications for leave must be submitted before noon on the day prior to that on which leave is required. All applications for leave submitted after this time should only be recommended or sanctioned by the Officer in charge of the class, as the case may be, in very special circumstances regarding which the student has produced due evidence.

30 (ii) When the period of leave required includes any College class attendance periods or College functions at which the attendance of a student is compulsory, the student before submitting his 'leave application' form to the Officer-in-charge of his class must obtain on same the initials of the members of the staff concerned with the College class attendance periods or compulsory College functions. The initials of these members of the staff will signify approval to the grant of the leave unless they note otherwise.

30 (iii) Students are warned that absence without leave is a serious breach of rules. At the commencement of any

except such as are organized by the Officers in charge
class

31 Students are expressly forbidden to approach examiners, whether internal or external, with enquiries concerning marks, prior to their publication; and students are hereby warned that any such enquiries will be dealt with as a serious breach of College rules

32 Students will not be permitted to appear for any external examination during their College course except to complete a university examination incompleting through sickness prior to their admission

33 The attendance of all students at the annual College Sports and Regatta is compulsory

34 There are the following shops on the College Estate —

(i) Banva s, (ii) Tailor s (iii) Shoemaker's, (iv) Sweetmeat seller s, as well as a General stores, Bakery and Dairy These have been established for the benefit of the students and under the strict supervision of the College authorities Students are requested, in their own interests, to patronise these in preference to others

Leave.

35 (i) No student is allowed to leave the station without first obtaining written sanction All applications for leave must be submitted on the correct "Leave application" forms, which forms can be obtained from the College office The "leave application" form duly filled in, must, in all cases, be first submitted to the Officer in charge of the class, who will submit the application to the Principal, except those applications for leave, which are covered by College holidays Such applications the Officer in charge can dispose of

If the leave be sanctioned, the Officer in charge of the class will note in his records the address of the student while on leave. The student will then, before proceeding on leave, show his sanctioned leave application form to his Hostel Superintendent who will note in his records the address of the student while on leave and sanctioned times and dates of start and expiration of the leave. The student upon return from leave will report his return to his Hostel Superintendent handing over his application form, which the Hostel Superintendent will return to the Officer in charge of the class concerned. If the student has overstayed his leave the Hostel Superintendent will so report to the Officer in charge of the class when returning the application.

In ordinary circumstances all applications for leave must be submitted before noon on the day prior to that on which leave is required. All applications for leave submitted after this time should only be recommended or sanctioned by the Officer in charge of the class, as the case may be, in very special circumstances regarding which the student has produced due evidence.

35 (ii) When the period of leave required includes any College class attendance periods or College functions at which the attendance of a student is compulsory, the student before submitting his 'leave application' form to the Officer in charge of his class must obtain on same the initials of the members of the staff concerned with the College class attendance periods or compulsory College functions. The initials of these members of the staff will signify approval to the grant of the leave unless they note otherwise.

35 (iii) Students are warned that absence without leave is a serious breach of rules. At the commencement of any

STANDING ORDERS

A student be compelled to absent himself from class on account of illness or if during College hours permission to leave for the same reason, he is to report at once to the College Hospital [vide section (c) above]

(e) In really serious cases the students will send notice to the College Hospital and it will be the duty of the Compounder to at once send for the Medical Officer, and when the Compounder is off duty, he is to arrange for a peon to be left at the College Hospital who can either call the Compounder or the Medical Officer as the case may be. The Medical Officer's address is the Roorkee Civil Hospital.

36 (iii) A student placed on the sick list will remain on the sick list till taken off by the Medical Officer. He will report daily at the Hospital at the specified hour while on the sick list unless specially exempted by that Officer. Students on the sick list excused from work or attendance at College are not permitted to leave their quarters except for medical purposes without the written authority of the Medical Officer intialed by the Principal. On the written application of the Medical Officer the Personal Assistant to the Principal is authorised to erect a necessary tent near the quarters of any sick student.

36 (iv) Students who have been frequently sick during the year will lose marks for physical fitness.

36 (v) All Indian servants belonging to the College or to students, who require medical treatment, should attend at the Hospital during the authorised hours.

36 (vi) No student may be treated privately. All cases of sickness must be reported and entered on the Sick report. Any student concealing a case of sickness will be severely punished.

36 (vii) The College Medical Officer will visit the hostels, cook houses, latrines and grounds once a week, as also the dairy and shops to see that the sanitary arrangements, etc. are properly carried out and will send a report every Monday morning to the Principal concerning any defects he may observe or any improvements that he may wish to suggest

Examinations

37 (i) *The work given in by students at examinations, projects or at any time during the course is accepted as their own honest and unaided work.* any attempt to deceive the Staff about it in any way whatever will on detection, be punished by immediate expulsion. No excuse whatever will be accepted

37 (ii) Any student not present at any examination from whatever cause will lose all marks for the same

37 (iii) Valuing the answers to an examination is a very tedious and difficult matter, and each slovenly set of answers wastes time and temper, and causes all to suffer. The following rules which are all really in favour of good, honest and neat work, will be strictly enforced and marks deducted in each case in which they are infringed or not acted up to —

(a) Carefully read and minutely adhere to the instructions printed on the cover of the answer books issued to students. These instructions are as follows —

(i) Number your answers to correspond with the numbers of the questions and if any question is divided into sub heads, be careful to number these also

(ii) No part of this book is to be torn out

STANDING ORDERS

of the work, including all rough work,
e written in this book

whatever is allowed on any other
except squared paper when required for
an answer Each sheet of squared paper must
be headed to correspond with that of this
answer book

(v) The paper should be ruled or folded so as to
make a margin on the left hand side of about
 $1\frac{1}{2}$ inches

(vi) The handwriting should be distinct

(vii) Only one side of the paper is to be written upon
The odd numbered pages starting with page 3
are to be used for answers and the even num
bered pages may be used for rough work if
required

(viii) In the event of this book becoming filled up
another book must be used and the number
used written below There is a tendency
amongst students to waste their own and the
examiner's time by writing unnecessarily
lengthy answers, by needless repetition and by
using a large number of answer books One
answer book should generally suffice All
answers should be as concise as possible, and
if sufficient thought is exercised before the
answer is committed to paper all repetition
can be avoided Careless and lengthy answers
will entail a loss of marks

(ix) These books are not to be folded but forwarded
flat and if more than one book is used by the
same student the second and succeeding books
must be placed, *inside the first*

will be given a TOP NUMBER TO USE instead of name. This must be written in the right top corner of the cover of *each* book. The number of each question must be written in margin of each page

(c) The examiner will mark under three heads —

- (i) Knowledge of the subject
- (ii) Accuracy in working
- (iii) Clearness of working and expression

If the student fails in (c) (iii) even though perfect in (a) (i) and (ii) he will lose marks. He is bound to show clearly how he obtained his results and the examiner has no time to waste marking slovenly work or roundabout methods. Take a mathematical examination for example —

- (i) Each process should be headed with a word or two of explanation
- (ii) All work having to be done in the book each step of calculation that cannot be done in the head, must be done on the even numbered pages

STANDING ORDERS

of the work, including all rough work,
written in this book

{ whatever is allowed on any other
, except squared paper when required for
an answer Each sheet of squared paper must
be headed to correspond with that of this
answer book

(v) The paper should be ruled or folded so as to
make a margin on the left hand side of about
1½ inches

(vi) The handwriting should be distinct

(vii) Only one side of the paper is to be written upon
The odd numbered pages, starting with page 3
are to be used for answers and the even num-
bered pages may be used for rough work, if
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(viii) In the event of this book becoming filled up,
another book must be used and the number
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answer book should generally suffice All
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if sufficient thought is exercised before the
answer is committed to paper, all repetition
can be avoided Careless and lengthy answers
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(ix) These books are not to be folded but forwarded
flat, and if more than one book is used by the
same student the second and succeeding books
must be placed, *inside the first*

- (x) Students with roll numbers using this book, are not to make any allusion to their names or initials, or to make any marks by which they may be identified
- (xi) The index on the inside of the cover of this book must be carefully filled in. Students must fill in against each question attempted the word 'answered'. In the case of questions having separate parts (a), (b), (c), each separate part attempted should be indexed as 'answered'. Nothing should be entered against questions which have not been attempted
- (b) In sessional and final examinations each student will be given a roll number to use instead of his name. This must be written in the right hand top corner of the cover of *each* book. The number of each question must be written in the margin of each page
- (c) The examiner will mark under three heads —
 - (i) Knowledge of the subject
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- (i) Each process should be headed with a word or two of explanation
- (ii) All work having to be done in the book, each step of calculation, that cannot be done in the head, must be done on the even numbered pages

STANDING ORDERS

- ii) All work known to be useless must be scored out.
- v) The answer must be plainly marked. Write the word "answer" opposite the answer in each case, thus Ans - " "
- (d) Students must bring their own pens, inks, pencils and drawing instruments. The use of slide rules may be permitted at the discretion of the examiner. No borrowing from each other is allowed during an examination.
- (e) No books or papers of any sort are to be brought into the examination room. Logarithm tables, graph and drawing paper, when necessary, will be provided.
- (f) No student may leave his seat for any reason except to quit the room. After having once left the room, for any reason whatever, he cannot return. A student wanting another book will call an attendant, who will bring it to him.
- (g) When time is up the examiner will call out, "cease writing" after which order, pen must not be put to paper for any purpose whatever.
- (h) The use of red ink or of coloured pencils should be avoided as far as possible, as the Examiner usually makes corrections in red ink or blue.

Project Regulations (including Tours).

Notes for the guidance of students in drawing up Projects

88 (i). *The collaboration of students during Projects is forbidden, and in this connexion attention is expressly drawn*

STANDING ORDERS

to Standing Order No 37 (i) and to the penalty for its infringement. It must be remembered that Projects are competitive examination subject to the ordinary examination rules. Students are warned that they are allowed to obtain assistance solely from (a) technical books in general (b) plans and models in the Model Room and Library and (c) plans of any existing engineering work which they may obtain from a source which is equally open to other students of their year.*

It is forbidden to obtain survey maps or level charts from outside sources or any assistance in designing or calculating from outside the College. Students are not permitted to obtain previous engineering projects executed by past students for the purpose of assisting them in their work. Finally in the absence of specific project regulations the best guide to a student's conduct is his own sense of honour.

38 (ii) A project is expected to be a piece of work such that a senior officer can examine criticize pass orders on it and hand it over for execution. To ensure this result it must be complete in every sense. It must include a clear concise report with cross references to all drawings a survey which can be checked with ease and celerity and drawings from which work or working drawings can be produced and from which the estimate can be checked. The drawings must be neat but should have no unnecessary elaboration. Calculations should be given for all important structural items. The student must carefully think out his work. Having gone over the ground he should scheme out his survey. To ensure this he has time to submit all necessary work all work in the field must be done neatly and methodically.

38 (iii) Having completed the field work the student is required to complete his project in the College. Work on

* Fide Standing Order No 2 such plans etc should in any case be shown to the Professor of Civil Engineering I

- (iii) All work known to be useless must be scored out.
- (iv) The answer must be plainly marked. Write the word "answer" opposite the answer in each case, thus Ans - " "
- (d) Students must bring their own pens, inks, pencils and drawing instruments. The use of slide rules may be permitted at the discretion of the examiner. No borrowing from each other is allowed during an examination.
- (e) No books or papers of any sort are to be brought into the examination room. Logarithm tables, graph and drawing paper, when necessary, will be provided.
- (f) No student may leave his seat for any reason except to quit the room. After having once left the room, for any reason whatever, he cannot return. A student wanting another book will call an attendant, who will bring it to him.
- (g) When time is up the examiner will call out, "cease writing," after which order, pen must not be put to paper for any purpose whatever.
- (h) The use of red ink or of coloured pencils should be avoided as far as possible, as the Examiner usually makes corrections in red ink or blue.

Project Regulations (Including Tours).

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38 (ii) A project is expected to be a piece of work such
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 can be checked with ease and celerity, and drawings from
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 he has time to submit all necessary work, all work in the
 field must be done neatly and methodically.

38 (iii) Having completed the field work the student
 required to complete his project in the College. Work

* This Standing Order No. 22 as to plans etc. should in any case,
 shown to the Professor of Civil Engineering I.

Work in quarters is not permitted, but this does not prevent a student from thinking out his designs and making sketches and calculations in his spare time. He must again map out a methodical scheme if he is to submit a complete project. Every drawing should be numbered with a heading showing what it represents. A scale should be shown on each drawing and sufficient dimensions should be given both for the estimate and for actual work. References to conventional signs need only be shown on one sheet for the whole project.

35 (iv) Above all the student should endeavour to show a sense of proportion as regards the relative importance of the various portions of his work. The whole of such details as galvanized or tiled roofs, railings, gateways etc. should be drawn sufficiently to show the style proposed. All calculations for applied mechanics should be fastened together and full references given in the text to all drawings. All details necessary to check the calculations should be given. All calculations referring to a particular design should run concurrently and be prefaced by a clear statement of the data connected with that design. No calculations should be shown on the drawings but magnitudes of the forces represented should be clearly shown. No marks will be allotted for applied mechanics drawings which are not accompanied by calculations in the report. The important details in drawing the finished survey, estimate, calculations and report should all be completed first. Cross references and headings should be carefully given so that it may be easy to follow from the report or estimate to what reference is being made. Any leisure time can then, if desired, be devoted to type drawings of well-known details and to generally beautifying, cleaning and elaborating the drawings. The cleaning of drawings by servants or menials is forbidden.

38 (v) The senior student is responsible for the discipline of the camp. He will at once report any authenticated case of a breach of the camp regulations and pending the arrival of instructions from the Officer in charge of the class he is empowered to issue such instructions to students or to Bhalassies as he may consider necessary.

38 (vi) Until a student has finally completed his field work in camp he is not permitted to visit Roorkee unless specially authorized to do so by the Officer in charge of the class. If a student on account of absolutely imperative circumstances desires to visit Roorkee on leave from the project camp he must submit a written application on a leave application form for leave at least 24 hours before he desires to quit the camp and he is not authorized to proceed on leave until he has received the necessary permission. Such leave will only be granted in very exceptional cases and on receipt of conclusive evidence that it is absolutely necessary.

38 (vii) Students in camp are not compelled to work on Sundays or on general College holidays but they are allowed to do so. No extension of time in camp or in College will be given to such students as observe these holidays.

38 (viii) No work, however, is permitted in the rooms on Sundays after the return from camp, and days may be utilized for work which is permitted.

38 (ix) All students while in camp are to show each day the hour of leaving camp, return, the nature and extent of the survey executed, giving the names of any villages, new points visited and any other concise information to an examiner in checking the progress of the work. It should always be on the person of the student.

Work in quarters is not permitted, but this does not prevent a student from thinking out his designs, and making sketches and calculations in his spare time. He must again map out a methodical scheme if he is to submit a complete project. Every drawing should be numbered, with a heading showing what it represents. A scale should be shown on each drawing and sufficient dimensions should be given both for the estimate and for actual work. References to conventional signs need only be shown on one sheet for the whole project.

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38 (vii) Students in camp are not compelled to work on Sundays or on general College holidays, but they are allowed to do so. No extension of time in camp or in College will be given to such students as observe these holidays.

38 (viii) No work, however, is permitted in the College rooms on Sundays after the return from camp though such days may be utilized for work which is permitted in quarters.

38 (ix) All students while in camp are to keep a diary showing each day the hour of leaving camp and the hour of return, the nature and extent of the survey or other work executed giving the names of any villages or other prominent points visited and any other concise information useful to an examiner in checking the progress of the work. The diary must always be on the person of the student so that it can

at once when demanded, and it must be kept up to
and must be written in ink

38 (x) Students should leave camp for work not later
than 80 a m daily

38 (xi) Every endeavour should be made to avoid giving
offence to villagers near the camp or elsewhere by needless
destruction of crops or by other damage. Poultry must not
be shot without permission of the local villagers

38 (xii) Every camping ground is to be kept clean. The
second senior student will be responsible for the supervision
of sanitation under the direction of the senior student.
Paper, etc. must not be left lying about. Fires are not to be
lighted inside the limits of the camp or near tents. Tins of
oil are not to be kept in Government tents. Lamps must not
be placed on tables where there is a danger of the tent catching
fire. Before a storm all lamps must be extinguished.

38 (xiii) Necessary tents should be located on the side
of the camp away from the direction from which the prevail-
ing wind blows and should be, if possible, 100 yards or
more from the camp.

38 (xiv) The purity of the water supply for drinking
and cooking should be carefully ensured. Drinking water
should be boiled before use. The washing of clothes should
not be permitted near a well from which the supply of drink-
ing water is drawn and in the case of stream the washing of
clothes must take place down stream of the drinking water
site.

38 (xv) After return to the College all students have to
work in the College on the preparation of the project during
the hours ordered from time to time. Permission for exemp-
tion has to be obtained from the Officer in-charge of the class.

38 (xvi) Students will be responsible for their drawings
and original survey records which are on no account to be

produced at once when demanded, and it must be kept up to date and must be written in ink

38 (x) Students should leave camp for work not later than 8 0 a m daily

38 (xi) Every endeavour should be made to avoid giving offence to villagers near the camp or elsewhere by needless destruction of crops or by other damage. Poultry must not be shot without permission of the local villagers

38 (xii) Every camping ground is to be kept clean. The second senior student will be responsible for the supervision of sanitation under the direction of the senior student. Paper, etc., must not be left lying about. Fires are not to be lighted inside the limits of the camp or near tents. Tins of oil are not to be kept in Government tents. Lamps must not be placed on tables where there is a danger of the tent catching fire. Before a storm all lamps must be extinguished.

38 (xiii) Necessary tents should be located on the side of the camp away from the direction from which the prevailing wind blows and should be, if possible, 100 yards or more from the camp.

38 (xiv) The purity of the water supply for drinking and cooking should be carefully ensured. Drinking water should be boiled before use. The washing of clothes should not be permitted near a well from which the supply of drinking water is drawn, and in the case of stream the washing of clothes must take place down stream of the drinking water site.

38 (xv) After return to the College all students have to work in the College on the preparation of the project during the hours ordered from time to time. Permission for exemption has to be obtained from the Officer in-charge of the class.

38 (xvi) Students will be responsible for their drawings and original survey records which are on no account to be

production — Each student will be allowed 1 bed, 1 date, 1 folding chair and 1 folding table (the latter two camp furniture). Club and Mess tents will have collapsible tables

38 (xviii) One cart per two students will be sanctioned and an allowance of two annas per mile per student be given to and from the project camp, over and above this, students must make their own arrangements. If the Personal Assistant to the Principal is required to obtain carts, etc., three days' notice must be given in writing. For a journey, which is made partly by rail and partly by road a student will be allowed the price of one and a half 2nd Class fares, and 8 annas a mile by road, for the journey to and from the project camp. The distance from the College to Roorkee station is $1\frac{1}{2}$ miles. No other travelling charges are admissible.

38 (xix) Two dak coolies for the camp one of whom will report daily to the senior student, will be allowed, provided the camp is within a 15 mile limit and three dak coolies for a 20 mile limit.

38 (xx) An allowance of Re 1 per mile for the survey is sanctioned to each student for the cost of flags, pegs, etc., subject to a maximum of Rs 10. No other contingent charges are admissible, and this also includes such items as stationery, portfolios, etc.

38 (xxi) Students, who are unable to finance themselves, can, on applying in writing to the Principal, receive an advance up to Rs 50 for payment to khallasas. This sum will be deducted from the total of the bill on the close of the project. The success with which students manage their coolies and make their camping arrangements will be considered in awarding marks for, "Fitness for Department."

38 (XIII) Instruments as required will be issued to each student each instrument bearing the class number of the student. The student will be personally responsible for the instruments being in adjustment and in good working order. Any damage sustained will be made good by the student and he will not be permitted to exchange his instrument or stand with another student and no student will be permitted to lend out his instrument. The damaged instrument with a report must be sent at once to headquarters.

39 (XIV) All students accompany their khalasies proceeding to and from work. In inclement weather instruments should be put away in their boxes and the boxes protected from rain and dust. When an instrument is kept standing for some time in the sun the cloth bag should be placed over it for protection. Level staves should be clamped together and used in use and they should not be sent again to the ground and should be placed horizontally on the ground and protected from rain and moisture.

prod
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even if such objects are to some extent without the
of the work.

38 (xiv) Plane-table sections, note books, etc., must have the roll number of the students clearly written on them. All plane table sections and records must be kept up to date in ink, and index and cross reference work should be made in the field. Level and traverse field books must be recorded in ink in the field.

38 (xvi) If a chain be used, the chain should be checked duly and the chain error noted in the field book. Levels should be tested for adjustment daily.

38 (xvii) All calculations for curves, azimuths, etc., should be continued in the survey note book.

38 (xviii) Students will see that as little damage as possible is inflicted on standing crops, and if chaining be necessary through such crops, the chain should be lifted, not dragged, from arrow to arrow. The instrument should be set up as near as possible to the line of demarcation between fields to avoid repeated trampling down of wheat, gram, etc.

38 (xix) Khalassies will be enlisted at Roorkee, and they will be entitled ordinarily to one day's leave per week, if the project be within 12 miles of Roorkee, or two days in a fortnight if beyond this limit. The day or days for leave is one for the student to arrange. Khalassies will receive pay at the prevailing rates for labour and tindals (one per squad of 4 men) will, if recommended, receive pay at the rate of Rs 1 extra per mensem. Each khalassie can obtain a record sheet which will entitle him to prior claim for enlistment for both the triangulation and project camps. A tindal on a higher rate of pay loses claim to the extra allowance, if he absents himself from any of the above camps. Khalassies will, after engagement, receive an advance of Rs 2

and will after the advance has been paid, work in arrears of pay and obtain other advances against the final payment. A student engaged on independent work will, if circumstances allow have a squad of 4 men. He will not be permitted to work with more

38 (xxx) When proceeding on a tour each student will be allowed the price of one 2nd class railway fare for any journey by rail and he will make his own arrangements, with this sum for the transport of his personal kit and servants. Each student will also be allowed Re 1 per day for carriage expenses and Rs 2 per night, if detained in a town while on tour. The students when not accompanied by a member of the College staff will be under the charge of the senior student

Workshop Rules

39 (i) Every student attending the Workshop course will be allotted a special number. On entering the shop he will be given a corresponding ticket. He will make the ticket over to the Foreman Instructor when taking his tools and receive it back when he has returned them correct at the close of the period. Upon completion of the period each student will check with and hand over to the Foreman all tools. When leaving the Workshops each student will give up his ticket at the gate.

39 (ii) Breakages and injuries to tools, machines and Government property generally must, in all cases, be reported at once to the Lecturer in charge.

39 (iii) Materials for instructional work will be issued to students by the Foreman with instructions regarding the work to be done. On completion of the work it must be shown to

and approved before a more advanced exercise
 given

(iv) Students are prohibited from working on any
 line, unless especially authorised in this respect by the
 lecturer in charge or the Foreman of the shop

39 (v) Loose clothing and *puggies* may not be worn in
 the Workshops

39 (vi) Students must not enter any shop other than
 that in which their class is working, without permission from
 the Lecturer in charge

Rules regarding student's independent work in the College Workshops

39 (vii) Every student wishing to do private work must
 first show to the Assistant Professor in charge, a fully dimen-
 sioned sketch of the article he wishes to make. If sanctioned
 by the Assistant Professor, the job will be given a workshop
 number and material issued for it

39 (viii) All articles being made, and the materials
 issued must on no account be removed from the Workshop by
 students but must be left in charge of the Shop Foreman
 when any article is complete it must be handed over to the
 Assistant Professor, and if satisfactory after examination by
 him it will be issued to the student who made it

39 (ix) Private work must not be done during hours
 allotted to Workshop Practice

Laboratory Rules.

General

40 (i) The greatest care must be taken in handling and
 using all apparatus any breakage or damage which occurs
 must be reported at once to the Professor or Lecturer. Any

damage or loss resulting from carelessness will be charged to the student or students responsible for it

40 (ii) After finishing any experiment, the student or students must replace in their proper positions all parts of the apparatus and reagent bottles used. The whole apparatus is to be replaced in its case if there be one. When using boxes of weights especial attention is drawn to this rule.

40 (iii) When working the benches etc., must be kept as clean as possible students being careful to avoid any unnecessary dirt or mess.

40 (iv) Students must enter in a laboratory note book, especially kept for the purpose details of each experiment performed by them during or immediately after its completion. Such rough notes must be recopied kept up to date and be always ready for inspection when required. In the Physical and Electrical Laboratories after finishing an experiment, students must mark it off on the form put up in the laboratory for the purpose.

40 (v) Students must do all experimental work entirely independently, all necessary explanations, etc. will be given by the Professor or Lecturer. Consultation between students is strictly forbidden during experimental work except when two or more students are ordered to conduct an experiment together.

40 (vi) All apparatus, chemicals, etc., are supplied free to students, but any breakage or damage will be charged to the student or students responsible for it.

Chemical Laboratory Rules

40 (vii) Every student must provide himself with a rough note book, a test-tube holder, a wire, a d padlock and key

and a copy of each of the prescribed text books. Keys of the padlocks should be labelled and left with the Lecturer.

40 (viii) Students should be careful not to waste chemicals, either by spilling them about, or by using unnecessarily large quantities.

40 (ix) All experiments giving rise to poisonous or obnoxious fumes must be performed in the fume chambers.

40 (x) Students are advised when heating either solids or liquids in test tubes to direct the mouths of the tubes towards the reagent shelves in order to prevent any accident occurring to their neighbours.

40 (xi) Students are on no account to touch the switches regulating the ventilation of the fume chambers.

Laboratory Balance Room Rules

40 (xii) Students when weighing, should always place the article to be weighed on the scale pan on the left hand side of the balance and the weights on the right hand side.

40 (xiii) Chemicals are on no account to be placed directly upon the scale pans. Chemicals to be weighed should be either put upon a watch glass or placed in a weighing bottle. Everything to be weighed should be *scrupulously clean and perfectly dry*.

40 (xiv) When weighing the balance pans should be *slowly and carefully* released. The weights are never to be placed upon the scale pan while the balance pans are free to swing.

40 (xv) The weights are on no account to be touched with the fingers but should be removed by means of the callipers furnished with each box of weights.

40 (xvi) During the process of weighing the weights are to be removed *one by one* from the weight box and *carefully* placed upon the balance pan. Weights must not be placed upon the table directly.

40 (xvii) Check the result of each weighing by adding together the weights removed from the weight box, then carefully remove weights from the balance pan

40 (xviii) All results must be carefully recorded in a note book and not on scraps of paper which are liable to be lost

40 (xix) Students when they have finished weighing, should remove the rider from the beam of the balance see that the balance pans are not free to swing close the balance, replace the balance cover and see that all the weights are correctly placed in the weight box

40 (xx) Hot crucibles are *on no account* to be put upon the balance pans Crucibles should be allowed to cool in a desiccator

40 (xxi) Apparatus should *not* be left upon the balance tables

40 (xxii) Should any of the balances be defective, the matter should be reported *at once* to the Professor or Lecturer

Engineering Laboratory Rules

40 (xxiii) The accuracy of the machines and instruments depending chiefly upon their correct adjustment, students are forbidden to tamper with them in any way

40 (xxiv) Steam valves *must never be opened except in* the presence of a member of the staff Serious accidents have happened in the past through non observance of this rule

40 (xxv) Reports of tests will be submitted on the day following that on which the tests were made The report, with any corrections will be returned to the student, after checking, on the student's next attendance at the laboratory

Survey Laboratory Rules

40 (xxvi) The greatest care must be taken in handling and using all survey instruments Any breakage or damage

which occurs must be reported at once to the Assistant Professor or Lecturer. A student is personally responsible for any instrument issued to him, and when kept by him in his quarters he should see that it is put in a safe place and not where it is likely to be knocked over by his servant in cleaning the room. No instrument should be left unattended in the field. In going to, or returning from work in the field, *students (except Civil Engineer Class, Third Year) must, on no account hand their instruments over to servants to carry.* Any damage done to an instrument must be made good by the student to whom the instrument was issued and in the case where students are working in parties the cost will be divided among the members of the party unless it can be shown clearly that one or other of the party was directly responsible for the damage done. In addition to having to pay for the damage caused, the student or students will have marks deducted either from their 'Fitness for department' or 'Survey' groups or from both.

College office

41 (i) Students are strictly prohibited from entering the College office rooms. Any work which they may have with the office should be transacted over the counters.

41 (ii) All payments by students for rent, fees, subscriptions etc, *must be made at the counter of the College office* between the hours of 10 a.m. to 1 p.m. and 2 p.m. to 3 p.m. on the days as may be ordered.

41 (iii) All payments will be entered in a register kept by the Cashier. All entries will be initialed by the students at the time of payment and this initial will signify that the entries are correct. No receipts will be given except for special reasons. Every payment must be made by students in person.

Central Library Rules.*General*

42 (i) The Library is maintained for the use of the Staff and students of the College. It is also available to Gazetted Government officers resident in Roorkee, and, under restrictions to the general public resident in Roorkee. Books are issued for reference purposes and on loan in accordance with these rules.

42 (ii) Certain works of reference can only be consulted in the Library and Reading rooms, and may not be removed from these rooms without the sanction of the Principal.

42 (iii) No book will be issued on loan from the Library until a signed receipt for the same has been handed to the Librarian, this receipt will be returned when the book is given back.

42 (iv) Books are liable to be recalled at any time by the Librarian. A new book may only be kept for 7 days. The term "new book" is one which has been received within six months of the date of issue.

42 (v) The transfer of books on loan to any other person is prohibited.

42 (vi) Persons making use of the Library are forbidden to remove books from the shelves. The Librarian on being informed of its catalogue number will supply any book required.

42 (vii) The Library will be closed annually to the issue of books from approximately July 5 to 15. All books out on loan must be returned not later than July 5.

42 (viii) Persons damaging or losing books will be charged with the full value of the same. The practice of marking or scribbling in books is strictly prohibited.

42 (ix) Persons infringing any Library rules are liable to be denied the use of the Library

42 (x) The Library is open daily during the College session, Sundays and holidays excepted, for the issue and return of books from 11 a m to 3 p m *During the vacation it is open on Thursdays only from 9 a m to 11 a m* The Reading-rooms are open daily during the College session from 8 a m to 4 p m, except on Sundays and holidays

Special

College Educational Staff.

42 (xi) A *special* issue of books for departmental use for periods not longer than one session, is allowable to Professors and Heads of College departments, provided the number so issued to any one department does not exceed twenty at any one time Such a special issue will require the sanction of the Principal Normally, in order that students should be able to consult any technical book, such books, if taken out by any member of the Staff, should be returned *within one month*, except as in Rule 42 (iv) If the Professor is of opinion, when he takes out the book, that he will require the use of it for longer than one month, he should put up an indent for a duplicate copy for the Central Library (chargeable to his laboratory grant), within one week of the issue of the book

42 (xii) All members of the Educational Staff are entitled to keep books on loan to a limit of eight volumes

42 (xiii) Applications for works already on loan will be registered by the Librarian, and on return will be issued to the applicants in order of priority

42 (xiv) The members of the Educational Staff are exempted from Rule 42 (vi) and are permitted to remove books from the shelves but not from the Library without signing the usual form and depositing same with the Librarian

Students

42 (xv) Text books on sale at the Book Depot will not be issued to students

42 (xv) Text books on sale at the Book Depot will not be for a period longer than 14 days except as in Rule 42 (iv) and

42 (xx) Re issues of any book after it has been returned will not be made to the same borrower until after the lapse of 7 days Students are entitled to keep books on loan up to the limits for the different classes given below but no book may be retained for a period longer than fourteen days

Engineer class	5 vols
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Overseer class and Draftsman class	3 vols
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42 (xvii) Rule 42 (xiii) is also applicable to students for scientific works

42 (xviii) For the vacation books may be issued to students up to a limit of 3 only with the sanction of the Principal

42 (xix) Students borrowing books containing plates must personally check the number of plates and enter the actual number on the receipt The plates are to be checked again when the book is returned Books returned one day will not be re issued till 3 clear days have elapsed except as in Rule 42 (xx) In order to obtain and return books students must attend in person

42 (xx) Students of all classes working or pro only borrow 3 volumes at a time and are allowed

same for 3 clear days only Books returned one day may not be issued before the following day to these students

Residents

42 (xxi) Members of the general public resident in Roorkee may, with the approval of the Principal, borrow books The applications of non commissioned officers and soldiers stationed in Roorkee should be submitted to the Principal through their Commanding Officer

42 (xxii) All residents of Roorkee entitled to use the Library under any of these rules may keep books on loan up to a limit of six volumes, no book being retained for a longer period than one month, except as in Rule 42 (iv)

42 (xxiii) Residents about to leave the station, even for a short period, must return all Library books

42 (xxiv) The term "Members of the general public resident in Roorkee" means a head of a family and the term includes his family but not as separate residents

Non residents

42 (xxv) The Library, excluding works of fiction, is available to gazetted Government officers and other out station residents, in special cases, on application to the Principal, at whose discretion a deposit may be required to cover the full value of the books borrowed

42 (xxvi) Those permitted to use the Library under Rule 42 (xxv) may keep books on loan up to a limit of six volumes, no book being retained for a longer period than two months. The cost of packing and carriage by registered post both ways being defrayed by the borrower. No "new book" will be issued

Thomsonian Society

43 (i) The aim is to cultivate the faculty of exact expression in speech and to provide for rational discussion of scientific technical engineering, literary and social subjects

Also to arrange lectures on subjects of general interest by members of the College Staff or outsiders

43 (ii) There shall be no admission fee or subscription of any kind

All members of the Staff and students of the Civil Engineer class shall be members *ipso facto*

43 (iii) The Principal will nominate every session a member of the Staff to be the President, who in consultation with the Principal shall have full control over the activities of the Society

43 (iv) The students will elect a Secretary at a general meeting to be held after the mid sessional examination every year. He will keep a record of the activities of the Society and issue notices with the approval of the President, for the various meetings

43 (v) A Vice President will be elected from among the 2nd year students, at a general meeting to be held after the mid sessional examination every year. He will assist the President and in his absence, preside at meetings

43 (vi) The Secretary will arrange meetings with the approval of the President. At least fourteen days notice should be given of each meeting

43 (vii) The debates shall be held in the premises of the Civil Engineer Class Students' Club

43 (viii) The Lacey Prize of Rs 25 will be awarded annually to the student who is judged to have submitted the '

paper and or, has most clearly expressed himself in discussions. The standard set will be high, and the prize will not be awarded unless work of real merit has been presented to the Society. The judges will be the Principal and the President of the Thomasonian Society.

Rules for the management of the College Magazine

44 (i) The magazine will be called The Lion, Thomason College Magazine. It will be under the control of a senior member of the Staff who will be called the Director, and who will be appointed by the Principal every session.

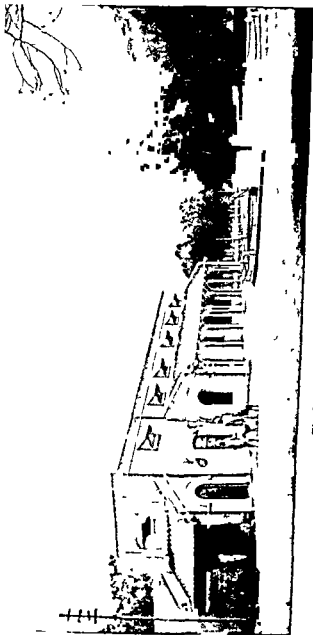
44 (ii) The Director will supervise its publication and control its finances.

44 (iii) An Editor and an Assistant Editor will be appointed annually before the College vacation by the Director in consultation with the Principal. The Editor may be either of the 2nd or 3rd year Civil Engineer Class, and the Assistant Editor will be an Overseer Class student of the 1st or 2nd year.

44 (iv) The new Editor and Assistant Editor will take up their duties with the second issue of the session following their appointment. The names of the new Editor and Assistant Editor will be announced in the first issue of the session following their appointment.

44 (v) There will be as many issues during the session up to a maximum of 5, depending on articles submitted and if funds permit.

44 (vi) A subscription of Rs. 5 for the session (that is rupees 8 per month for 10 months), will be collected from the



The Thomson College Stores and Dairy.

students of the Civil Engineering class and of Rs 3 12 (that is annas 6 per month for 10 months), from the students of the Overseer class. Members of the College Staff may, if they desire, subscribe at the same rates respectively.

44 (vii) The magazine will be kept on record in bound volumes in the College Library and in the students' Clubs.

44 (viii) From time to time, copies of the magazine may be sent to distinguished old alumni of the College and to certain institutions for purposes of exchange. A list of these will be sent to the College Office at the beginning of each session. The College Office will distribute the magazine to the subscribers.

44 (ix) Writers of articles will be entitled to receive one extra copy, free of charge. More copies will be supplied to them on payment of actual cost.



College dairy.

45 All European students are to obtain milk and butter from the College Dairy, and from no other source. This Dairy is maintained for the good of their health, and students are earnestly requested to see that their servants do not supply milk or butter from outside sources, and by this means endanger the health and even risk the lives of students. Any servant detected supplying milk or butter to European students from outside sources will be expelled from the College Estate, and students will be held responsible that their servants are informed of this fact. Butter and milk may be paid for through the Dairy bills. It is desirable that all students other than European, should obtain their supplies from the Dairy.

Subscriptions to athletics and games.

46. Students of the Civil Engineer and Overseer classes have to pay the following donations and subscriptions :

(a) Civil Engineer Class.

Donations

Sports Fund .. Rs 3 per session (all sessions).

Recreation Fund Rs 10 per session (for 1st and 2nd sessions only).

Subscriptions

Recreation Fund Rs 10 per month per session (all sessions)

(b) Overseer class (Draftsman class optional).

Donations

Sports Fund .. Rs 2 per session (all sessions).

Club and Recreation Fund, Rs 2 per session (all sessions).

Subscriptions

Club and Recreation Fund Rs 3 8 per mensem, per session (all sessions)

Rules of Civil Engineer Class Students' Club.

47 (i). No person other than students of the Civil Engineer class shall be eligible for ordinary membership. No one is compelled to join, but those, who do so, will have to abide by the rules and regulations in force, at the time, or as may be altered thereafter, and will not be permitted to withdraw from the Club during that session. A member guilty of a breach of the rules, or of conduct unbecoming a member of the Club may be debarred from enjoyment of the Club privileges to the extent approved by the Principal on the recommendations of the President and the Executive Committee.

All qualified past students may be invited to become honorary members of the Club, with the consent of the Principal

47 (u) At the beginning of each session, the Principal will nominate either himself or a member of the Senior Staff as President of the Club and another member of the Staff as Vice President

All affairs of the Club will be managed by an Executive Committee, the Chairman of which will be nominated by the Principal from among the Third Year students, and eight honorary secretaries elected at a general meeting of the Club in the manner indicated below

(a) General Secretary	} Elected from 2nd* Year class members	} Elected at the close of the previous College Session
(b) News Secretary		
(c) Furniture Secretary		
(d) Garden Secretary		
(e) Billiards and lighting Secretary	} Elected from 2nd or 3rd* Year class members	}
(f) Music Secretary		
(g) Indoor Games Secretary	} Elected from 1st Year class members	} Elected as soon as possible after commencement of the College Session
(h) Refreshment Secretary			} Elected from any of the three classes

A general meeting shall be called before the close of a College session to elect secretaries (a), (b), (c), (d), (e) and (f) for the ensuing College session. The new secretaries will take over charge of their respective duties from the retiring secretaries together with the account books and all connected papers before the College vacation commences and report their having done so to the Vice-President.

Before the College vacation commences the retiring secretaries (g) and (h) shall hand over charge to the general secretary for the ensuing College session appointed at this General Meeting together with all account books and all

*Denotes those members who will become 2nd and 3rd year member during the immediately ensuing College Session

connected papers and report their having done so to the Vice-President

A general meeting shall be called as soon as possible after the commencement of a College session to elect secretaries (g) and (h) and to these newly elected secretaries (g) and (h) the general secretary will hand over all the account books and connected papers, which have been in his custody during the College vacation, without delay and report his having done so to the Vice President

47 (iii) The Club reserves the right to enforce an office on a member of the 2nd Year class at an election for this purpose, whenever an emergency arises for so doing

47 (iv) During the temporary absence of any secretary from Roorkee he will arrange for his work to be carried out by some other member proposed by him and approved by the President

47 (v) At the general meeting held before the close of a College session at which certain new secretaries for the ensuing session are elected a Finance Committee shall be formed for preparing the annual budget. The Committee will include

- (a) A chairman (elected from 3rd year class)
- (b) Four members other than secretaries and elected from each class
- (c) The General Secretary, who will also act as Secretary of the Finance Committee

The Finance Committee will call upon the various new secretaries to submit their estimates of expenditure. After examining these the Committee will frame the budget and will submit it to the Executive Committee for approval. After approval has been given by the Committee the budget will be passed at the Annual General Meeting of the Club

47 (vi) Should circumstances warrant it, the Executive Committee may make subsequent minor changes in the budget to guard against over expenditure

47 (vii) One General Meeting which shall be called by the President as early as possible after the election of certain secretaries and before the close of the session shall be termed the annual general meeting. Ordinary general meetings of the Club can be called by the Executive Committee after two days notice

A general meeting can also be called by one third of the members of the Club after four days notice in writing to the General Secretary. The agenda for all general meetings must be posted at least forty eight hours prior to the meeting

Questions regarding the management and expenditure of the Club can be asked by any member if twenty four hours notice is given to the General Secretary about them previous to a General Meeting subject to the approval of the President

A vote of no confidence can only be passed on any secretary if two thirds of the members of the Club desire to do so

At the Annual General Meeting and all general meetings either the President Vice President or Chairman of the Executive Committee will preside. Strict order will be maintained by members present at the annual general meeting and ordinary general meetings. Lack of discipline on the part of any member or members at any general meeting at which the President is not presiding shall be reported by the officer presiding to the President for necessary action

The minutes of all general meetings (both annual and ordinary) shall be recorded by the General Secretary as so

as possible after the meetings and the same sent to the President for perusal

47 (viii) The quorum for either an annual, general or ordinary meeting shall consist of one-third the number of active members of the Club, excepting when constitutional changes are to be discussed, when a quorum of at least two-thirds of the number will be required.

47 (ix) The following subscriptions shall be paid in advance by each member of the Club and will be deposited in the College treasury :—

- (a) Entrance donation of Rs 15 by instalments of Rs 5 per annum.
- (b) Monthly subscription of Rs 3 for the College session only.
- (c) Honorary members, if resident in Roorkee, shall be required to pay a subscription of Rs. 2 per mensem

47 (x) The Club premises shall only be used for entertainments or meetings of a general nature and only with the Principal's sanction

47 (xi). The Executive Committee may, provided a resolution has been passed at a General Meeting, collect extra subscriptions to meet any proposed expenditure which must be for a general purpose not provided for in the ordinary yearly accounts. This may be collected through the College office and all members will have to pay the subscription. In special cases the President can allow a single member not to take part in a function and not pay, but in cases where more than one member dissents the case must be referred to the Principal whose decision shall be binding on the dissenting members

47 (xi) The cash from the regular subscriptions and billiards earnings shall be kept in the College Treasury. The amount accumulated from billiards will be earmarked for repairs and upkeep of the table and not used for any other purpose without the express sanction of the Principal. If money other than revenue is required for billiard table repairs arrangements must be made in the following budgets to repay such money from revenue.

The General Secretary will maintain an up to date record of the total receipts and expenditure of the Club during his year of office.

Expenditure from capital must in all cases be regarded as a loan and budget provision made for repayment from revenue. This repayment need not necessarily be made in one year. All expenditure from capital must have the sanction of the Principal.

At the beginning of each month the secretaries of the various sections will hand their accounts, together with vouchers and bills to the General Secretary, who will submit bills to the President after ascertaining that they are within the budget allotment. The President may either sign the pay order or delegate the power to the Vice President, and the General Secretary will draw the funds required from the treasury and distribute to the section secretaries concerned. V P P charges will be dealt with in a similar manner but must be paid as they arise.

47 (xii) The General Secretary shall be allowed an imprest of Rs 10 for petty expenses of the Club. Such imprest will be recouped as often as is necessary.

47 (xiii) The General Secretary, with the assistance of the section secretaries, will prepare a detailed account of all expenditure and receipts each month. These accounts will

audited by the Finance Committee each quarter. The audit report will then be considered by the Executive Committee, and the audited accounts for the whole year placed before the Annual General Meeting of the Club.

The various secretaries shall also submit a detailed report of their work at this General Meeting.

47 (xv) The Club premises will usually be open from 10 a.m. to 9 p.m. in the first half session and from 10 a.m. to 10 p.m. in the second half session but on Sundays and holidays the Club shall open from 8 a.m. and 7 a.m. respectively. On special occasions the Club premises may be kept open after the aforesaid hours provided the Executive Committee has previously obtained the sanction of the Principal through the President, unless he is the Principal otherwise through the Vice President. The Club premises will be closed during the College vacation and no member or honorary member shall have the right to use them during that period.

47 (xvi) Members are expected to use the Club property with great care and not to remove from the Club premises anything which is not their private property.

Any damage to Club property must be reported promptly to the Vice President by the General Secretary. The member concerned shall pay for the damage such amount as is assessed by the Personal Assistant to the Principal upon intimation from the President or Vice President after the approval of the Principal has been obtained.

An up-to-date inventory of all the Club property shall be kept with the General Secretary and the departmental secretaries shall also keep a list of the property in their charge. Copies of these lists will be put up on the notice board for a

week 11 the beginning of the session. The proposals for new purchases together with an estimate of the cost of same are to be submitted to the President through the Vice President for countersignature before any purchase is made. A list of all such proposed new purchases is to be exhibited on the notice board from time to time.

The secretaries should realize that they are servants of the Club and are not entitled to privileges other than those enjoyed by all the members of the Club. In no circumstances must they use any Club property for their own private use. Neither must Club servants be called upon to perform duties other than those connected with the Club. Any such instances brought to the notice of the President will be dealt with by him in consultation with the Executive Committee. In every case the action taken shall be reported to the Officer-in charge, Civil Engineer class.

47 (vii) A member may bring with him to the Club premises occasionally one or two gentlemen as his guests. He will be responsible for his guests while they are in the Club premises.

No guests will be allowed to be present at the General or Business meetings of the Club.

On the occasion of any Club function invitations shall be issued only by the General Secretary, after the list of invitations has been approved by the President. Members desiring to invite any friends will send the names and addresses of these friends beforehand to the General Secretary who will submit all names to the President for approval.

47 (viii) The Club establishment will be regulated and controlled by the General Secretary under the orders of the Executive Committee.

The Club premises will be properly looked after and kept clean and tidy under the supervision of the Garden and the General Secretaries. Anything in the nature of repairs being required will be reported to the Personal Assistant to the Principal.

The Personal Assistant to the Principal will report to the President any defect in cleanliness for necessary action.

47 (xix) Instances of neglect or indiscipline on the part of any servant of the Club shall be brought at once to the notice of the General Secretary, who may recommend him to the President for such disciplinary measures as may be necessary.

47 (xx) During the absence of members on duty in camp one or more of the Club servants as may be decided by the Executive Committee may accompany them to be in charge of the refreshments and indoor games at the camp. If considered necessary by the Executive Committee temporary establishment may be engaged for the period of the camp provided the budget allotment will cover the extra charge.

47 (xxi) The billiard table can be used by members on the payment of the following charges: Annas 2 per member for singles and anna 1 pies 6, per member for doubles per game lasting 25 minutes or part thereof, to be charged against those taking part in a game. These charges will be realized through the College office each month.

Any damage to the billiard table cloth shall be paid for at the minimum rate of Rs 5 per inch. For the first cut the charge will be more, the amount of which will be fixed by the President.

Members are expected to abide by any other instructions regarding billiards issued by the Billiards Secretary, and approved by the President.

47 (xvi) Several in door games can be played at present in the Club. Gambling is definitely prohibited in the Club premises.

47 (xvii) Badminton and tennis are the only out door games provided by the Club at present and for these no extra charge is made.

47 (xviii) Members will vote for the newspapers and periodicals which they desire for the Club, on a list circulated by the News Secretary at the close of the College session. The proposed list shall then be submitted to the Executive Committee and forwarded by the Chairman of the Executive Committee to the President for approval. The order for foreign periodicals will be placed before the annual vacation begins.

At the beginning of the College session all papers selected by the Executive Committee will be auctioned to the members of the Club and the proceeds credited to the Club funds. The purchaser of any paper or periodical will receive the old copy of the same as soon as the new one arrives.

47 (xix) The constitution can be modified only once a year and only then provided 75 per cent of the quorum laid down in rule 47 (viii) vote in favour of the proposed changes. Before any such change can be discussed it shall be necessary for the General Secretary to give one month's notice to all members. For this it is also necessary to obtain the sanction of the Principal.

All correspondence including newspapers and periodicals meant for the Club shall be delivered to the General Secretary who will dispose of them in the manner required by the rules.

47 (xx) All members when attending the Club are requested to refrain from appearing in negligée dress and to be neatly and properly attired.

Rules of the Overseer Class Club.

48 (i). All students of the Overseer Class have to be members of the Club, and they shall abide by the rules and regulations in force. A breach of the rules or conduct unbecoming a member of the Club will debar him from the enjoyment of the Club privileges to the extent approved by the President on the recommendation of the Club Secretary.

48 (ii) The Principal will be the patron of the Club and the Head Master, will be the President of the Club.

The Vice-President will be the Senior student of the Second Year, who will also be one of the six members of the Executive Committee.

The President will be assisted in the management of the Club by a committee composed of five members. Five of these will be elected at a general meeting of the Club in the following manner:

- | | |
|---------------------------|--|
| (a) Club Secretary, | } Will be in charge of various outdoor games connected with the Club |
| (b) Tennis Secretary, | |
| (c) Hockey Secretary, | |
| (d) Football Secretary, | |
| (e) Volleyball Secretary, | |

Disciplinary and financial control will be exercised by the Head Master, Overseer Class.

48 (iii) All members will pay a subscription to the Club, which includes recreation, of Rs 3-8 per mensem per session, also a donation of Rs 2 per session.

Special rules

49 (i) All European students are expected to attend Divine Service once every Sunday at their own place of worship.

49 (ii) Indian students will make their own arrangements for messing

49 (iii) Students are not allowed to enter boats nor bathe in the main canal till they have qualified in swimming. Boating is only allowed in the reach of the canal between the Roorkee city bridge and the Ganeshpur bridge

Students who wish to learn to swim must begin their lessons in Amber talab and not in the main canal. Such students will take their lessons only at times arranged by the Officer in charge, Boating, who will arrange that the College Boatman is present



YEARLY LISTS OF STUDENTS, WHO HAVE PASSED OUT OF THE COLLEGE FROM 1931 INCLUSIVE. (FOR LISTS DATING BACK TO 1928, INCLUSIVE SEE CALENDAR FOR 1933. FOR LIST DATING BACK TO 1910 INCLUSIVE SEE CALENDAR FOR 1928 FOR LISTS DATING BACK TO 1890 SEE CALENDAR FOR 1925 FOR LISTS TO 1875 SEE CALENDAR FOR 1922), AND FOR LISTS TO 1848 SEE CALENDAR FOR 1910.

1931

No	Names	Where educated	Marks gained	per cent	Remarks
CIVIL ENGINEER CLASS THIRD YEAR (Full marks, 8 090)					
1	Jagat Narayan	Queen's Inter College Benares	6569	81	Higher Certificate as Assistant Engineer Council of India Prize of Rs 1 000 for General Proficiency. Cautley Memoria Gold Medal for Mathematics Calcott Reilly Memorial Gold Medal for Applied Mechanics Silver Medal for Descriptive Engineering General MacLagan's prize of books for Electrical Engineering and Physics Silver Medal for Laboratory Practice Group IV Sushila and J Mitra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry
2	Mannige Anand Rao (Jodhpur State)	Jaswant Jodhpur College,	6430	79	Higher Certificate as Assistant Engineer Thomson Prize of Rs 2 0 for the most distinguished student who obtains the Higher Certificate but does not obtain the Council of India prize Silver Medal for Survivors
3	Prem Mahesh Agerwala	Meerut Meerut College,	6414	78	Higher Certificate as Assistant Engineer Rai Bahadur Hanbha Lal Gold Medal for best Indian student who does not obtain the Thomson Prize

1931

No	Nam s	Where educated	Marks Gained	Per cent.	Remarks
4	Dharam Bir Anand	Govt College, Lahore	6278	72	Higher Certificate as Assistant Engineer
5	Iqbal Narain Mhta B A	F. C College, Lahore	6013	74	Higher Certificate as Assistant Engineer, Thomson Memorial Gold Medal for best Engineering Designs.
6	Prem Nath Gadi, B A	Govt. College, Lahore	5844	7	Higher Certificate as Assistant Engineer
7	Hans Raj Dhir	Govt College, Lahore	5839	72	Higher Certificate as Assistant Engineer. Silver Medal for Me- chanical Engineering
8	Gian Chandra Khanna, B A	Govt College, Lahore	5790	72	Higher Certificate as Assistant Engineer
9	Bhagnan Das Sud	D A V College, La hore	5707	69	
10	Chetan Das Arora	D A V College, Lahore	5604	65	
11	Heshava Dat Sanwal, B Sc	Canning College, Lucknow	5490	68	
12	Dharam Nath Endlaw, B Sc.	Hindu College, Delhi	5373	66	
13	Terence Augus tus Webb	St George's College, Mussooree.	5339	66	Ordinary Certificate as Assistant Engineer
14	Sumer Singh Varma	Meerut College, Meerut	5233	65	
15	Jagdish Narain, B Sc	Canning College, Lucknow	5183	64	
16	Vidya Sagar Pahwa	Sanatan Dharma College, Lahore	5146	64	
17	Dinker Krishna Datey	Robertson College, Jubbulpore	5146	64	
18	Vidya Sagar, B Sc	Bareilly College, Bareilly	5133	63	

1931.

No	Name.	Where educated	Marks gained	Per cent	Remarks
19	Jagdish Kumar B.Sc	Meerut College, Meerut	5079	63	Ordinary Certificate as Assistant Engineer
20	Ulfat Rai Chad dha	F C College, Lahore	5040	62	Ordinary Certificate as Assistant Engineer Silver Medal for Photography and Per rototype
21	Om Prakash Gupta	Agra College, Agra	4974	61	Ordinary Certificate as Assistant Engineer. Silver Medal for Draw- ing
22	Morari Lal	Meerut College, Meerut	4904	61	Ordinary Certificate as Assistant Engineer
23	Munhaj ud din Ahmed Mirza	Allahabad Univer- sity, Allahabad	4819	60	Ordinary Certificate as Assistant Engineer. Silver Medal for Photography and Per rototype
24	Amar Chand Khosla	Forman Christian College, Lahore	4817	60	Ordinary Certificate as Assistant Engineer.
25	Yudhishtar Lal Tandan	Govt College, Lahore	4811	59	
26	Sita Ram Chad dha	Govt College, La- hore.	4773	59	
27	Badri Nath Rastogi, B.Sc	St George's College, Mussooree	4749	59	
28	Anand Narayan	Kayasth Pathshala Inter College, Allahabad	4723	58	
29	Abdur Rashid	Forman Christian College, Lahore	4706	58	
30	Uma Shankar Saksena, B.Sc	Bareilly College, Bareilly	4614	57	Ordinary Certificate as Assistant Engineer.
31	Jaswant Rai Kapoor	Forman Christian College, Lahore	4593	57	

1931.

No	Names	Where educated	Marks gained	Per cent	Remarks
OVERSEER CLASS, SECOND YEAR (Full marks, 4 800)					
1	Rup K. shore Bhatnagar	S M College, Chan dausi	3789	79	Higher Certificate as Overseer Silver Me dal and Rs 100 for General Merit Rai Bahadur Kanhya Lal Silver Medal for best Indian student who stands first Silver Me dal for Elementary Mathematics Fairley Memorial Silver Medal for Applied Mechanics Silver Medal for Des criptive Engineering Sullivan Memorial Sil ver Medal for Mecha nics Silver Medals for Surveying and Draw ing Keay Memorial Silver Medal and Rs 18 for Estimating Sil ver Medals for Ac counts and Mechani cal Engineering Durga Das Dutt Silver Medal for best Indian stu dent obtaining Higher Certificate
2	Munshi Lal Gaur	N R E C Inter College, Khurja	3429	71	Higher Certificate as Over seer Rai Bahadur Kan hya Lal Silver Medal for Indian student who stands second in the class
3	Ram Rikh .	Government High School, Muzaffar nagar	3299	69	Higher Certificate as Overseer
4	Malti Prasad	Kashi Ram High School, Saharanpur	3296	69	
5	Baij Nath Singh	D A V College, Cawnpore	3237	67	

1931

No	Names	Where educated	Marks gained	Per cent	Remarks
6	Janeshwar Prasad	Govt High School, Muzaffarnagar	323	67	
7	Brij Nandan	Meerut College, Meerut	3207	67	
8	Tuloki Nath Gupta	Govt High School, Bulandshahr	3166	66	
9	Tuloki Nath	Meerut College, Meerut	3145	66	
10	Pam Chandra Gupta	D A V High School, Muzaffarnagar	3138	65	
11	Ram Dhani	Q I College, Benares	3121	65	
12	Lakshmi Chand	Meerut College, Meerut	3092	64	
13	Raghunandan Prasad Sharma	D A V Int College, Dehra Dun	3032	63	
14	Madan Lal	A P Mission High School, Dehra Dun	3008	63	Higher Certificate as Overseer
15	Horam Singh	Govt High School, Bulandshahr	3003	63	
16	Sukhwant Pal Jain	Herbert Inter College, Kotah (Rajputana)	299	62	
17	Kedar Nath Singhal	N R E C Inter College, Khurja	2976	62	
18	Prahlad Chandra Mathur	Government Inter College, Allahabad	2960	62	
19	Tej Singh Verma	D A V High School, Muzaffarnagar	2949	61	
20	Bhag Mal Jain	The D Jain High School Baraut	2939	61	
21	Ram Lal	Kashi Ram High School, Saharanpur	2915	61	

1931

No	Names.	Where educated	Marks gained	Per cent	Remarks
22	Abdul Jabbar Khan (Rampur State)	M L Jubileo Insti- tute, Calcutta	2301	60	Ordinary Certificate as Overseer
23	Prakash Narain Mathur	Government Inter College, Moradabad	2890	60	Higher Certificate as Overseer
24	Rikhab Das	Meerut College, Mee- rut	2881	60	
25	Bachaspati Kala	Government High School Srinagar, Garhwal	2879	60	
26	Chandra Swarup Gupta	Govt High School, Bijnor	2878	60	Ordinary Certificate as Overseer
27	Rameshwar Pant	Government High School, Nain Tal	2803	60	
28	Hari Ram	Government High School, Muzaffar nagar	2860	60	
29	Ram Swarup Vaish	Government High School, Muzaffar nagar	2841	59	
30	Anup Singh Gupta	D N High School, Meerut	2818	59	
31	Mitra Sen Jain	Meerut College, Meerut	2797	58	
32	Har Prasad	N R E C Inter College, Khurja	2768	58	Ordinary Certificate as Overseer Silver Medal for Photo and Ferro type
33	Madho Ram Gupta	Government High School Muzaffar nagar	2761	58	
34	Dost Moham- mad (Bundi State)	King George V School, Banswara State	2695	56	
35	Bhup Singh ..	Meerut College, Meerut	2684	56	Ordinary Certificate as Overseer

1931

No	Names	Where educated	Marks gained	Per cent	Remarks
36	Jagdish Prasad	Agra College, Agra	2662	55	} Ordinary Certificate as Overseer
37	Brahma Datta Gauttama	D A V High School Muzaffarnagar	2630	55	
38	Ram Chandra	D N High School, Meerut	2607	54	
39	Ganga Ram	Govt High School, Meerut	2587	54	
40	Govind Sharan	D N High School, Meerut	2518	52	
41	Faqir Chand	Meerut College, Meerut	2443	51	
42	Har Sarup	Govt High School, Meerut	2891	60	

1931

No	Names of student	Remarks
DRAFTSMAN CLASS THIRD YEAR		
1	Tulsi Ram Wilkhu	Certificate as Draftsman, 1st Class 1st prize of Rs 30 as best Draftsman Silver Medal for General Merit and Independent Technical work
2	Anand Sarup Jain	Certificate as Draftsman 1st Class 2nd prize of Rs 20 as 2nd best, Draftsman
3	Mansumrat Das Jain	Certificate as Draftsman, 1st Class
4	Harish Chandra Pande	} Certificate as Draftsman 2nd Class
5	Abdul Samad	
6	Dalip Singh	
7	Raja Ram	
8	Lala Dhar Sharma	
9	Hulash Chand Jain	

1932

No	Name	Where educated	Marks gained	Per cent	Remarks.
CIVIL ENGINEER CLASS, THIRD YEAR					
(Full marks—8,090)					
1	Frederic William Kelly	La Martinière College Lucknow	8411	79	Higher Certificate as Assistant Engineer, Council of India Prize of Rs 1000 for General Proficiency Thomason Memorial Gold Medal for best Engineering Designs Silver Medal for Descriptive Engineering and Surveying
2	Dina Nath Chopra	Government College, Lahore	8277	78	Higher Certificate as Assistant Engineer, Thomason Prize of Rs 250 for the most distinguished student who obtains the Higher Certificate but does not obtain the Council of India Prize General MacLagan's Prize of Books for Electrical Engineering and Physics
3	Hari Datta Vaj	Government College, Lahore	8120	76	Higher Certificate as Assistant Engineer Rai Bahadur Kanhuja Lal Gold Medal for best Indian student who does not obtain Thomason Prize Cavendish Memorial Gold Medal for Mathematics Cavendish Memorial Gold Medal for Applied Mechanics Silver Medal for Mechanical Engineering.
4	Prem Sheel Bhatnagar	Government College, Lahore	8078	75	Higher Certificate as Assistant Engineer Silver Medal for Drawing

1932

No	Names	Where educated	Marks secured	Per cent	Remarks
5	Ch Abdul Aziz, B.A.	Government College, Lahore	6017	74	Higher Certificate as Assistant Engineer
6	Jatindra Singh, B.A.	Khalsa College Amritsar	6007	74	
7	Ramji Dass Jhangl, B.A.	D. A. V. College, Lahore	5887	73	
8	Manohar Nath B.Sc.	Meerut College, Meerut	5737	71	
9	Gurdial Singh Shahid	Khalsa College, Amritsar	5706	71	
10	Rishi Raj Menh diratta B.A.	D. A. V. College, Lahore	5636	70	
11	Hulas Chandra Jain	Meerut College, Meerut	5558	69	
12	Kundan Lal Handa, B.A.	Government College Lahore	5560	69	
13	Nasir Ahmad B.A.	Government Col lege Lahore	5559	69	
14	Kailash Nath Bhargava B.Sc.	Allahabad Univer sity Allahabad	5444	67	
15	Mirza Anis Beg	La Martinière Col lege, Lucknow	5400	67	Higher Certificate as Assistant Engineer.
16	Charan Das Kapur	Forman Christian College, Lahore	5398	67	
17	Rasput Kumar Sinha, B.Sc.	Allahabad U Science College, Allahabad	5378	66	
18	Ram Lal Kumar, B.A.	Government College, Lahore	5272	65	Ordinary Certificate as Assistant Engineer Silver Medal for Photo. and Ferrottype

1932

No	Names	Where educated	Marks gained	Per cent	Remarks
19	Shanti Swarup	Radha Swami E. Inst, Dayal Bagh, Agra	5235	65	Ordinary Certificate as Assistant Engineer
20	Lal Chand Arora	Forman Christian College, Lahore	5215	64	
21	Nand Kishore	Government Col lege, Lahore	5183	64	
22	Madan Gopal Kashyap B.A.	Government Col lege Lahore	5142	64	
23	Shanti Suman, B.A.	Government Col lege, Lahore	5084	63	
24	Kailash Chandra Mathur, B.Sc	Allahabad Univer sity, Allahabad	4962	61	
25	Har Gopal Mahendra	Forman Christian College, Lahore	4961	61	
26	Balwant Rai Khosla	D A V College, Lahore	4930	61	
27	Satya Ranjan Chaudhury.	Allahabad Univer sity, Allahabad	4889	60	
28	Sobha Ram ..	University of Allah- abad	4852	60	
29	Sh Abdul Rahman	Inter College, Mus lim University, Aligarh	4826	60	
30	Sumair Chand, B.Sc	Allahabad Univer sity, Allahabad	4648	57	
31	Balraj Chowla, B.A.	Government College, Lahore	4562	56	

1932

No	Names	Where educated.	Marks gained	Per cent	Remarks.	
OVERSEER CLASS, SECOND YEAR. (Full marks 4,800)						
1	Kula Nand Thapliyal.	Partap School, Garhwal	High Tehri	3653	76	Higher Certificate as Overseer Silver Medal and Rs 100 for Gene- ral Merit R. B. Kanhya Lal Silver Medal for best Indian Student who stands 1st in the class. Farley Memorial Silver Medal for Applied Mechanics. Silver Medals for Des- criptive Engineering and Surveying Durga Das Dutt Silver Medal for best Indian stu- dent obtaining Higher Certificate
2	Karam Uddin	Government High School, Muttra	High	3410	71	Higher Certificate as Overseer R. B. Kanhya Lal Silver Medal for Indian student who stands 2nd in the class. Silver Medal for Work- shops Sullivan Memo- rial Silver Medal for Mechanics
3	Vidya Dutt Nautival	D A V College Dehra Dun	College	3358	70	Higher Certificate as Overseer.
4	Daya Ram	Meerut College, Meerut.	College,	3333	69	Higher Certificate as Overseer Silver Medal for Elementary Mathematics
5	Shri Ram Joshi	Agra College, Agra	College,	3325	69	Higher Certificate as Overseer
6	Zakawat Ali Naqvi	Government Inter- mediate College, Nansi	College,	3321	69	
7	Ram Sharan	S S M College, Chandauli	College,	3314	69	

1932

No	Names	Where educated	Marks gained	Per cent	Remarks
8	Mitthan Lal	D A V High School, Muzaffar nagar	3235	68	Higher Certificate as Overseer Silver Medal for Drawing
9	Vidya Swarup Verma	S S M Intermediate College Chandausi	3284	68	Higher Certificate as Overseer
10	Kanhaya Lal	Meerut College, Meerut	3281	65	
11	Meghraj Singh	Government High School Saharan pur	3196	6	Higher Certificate as Overseer Key Memorial Silver Medal and Rs 18 for Estimating
12	Lakshpat Rai Singhal	N R E C Intermediate College Khurja	318	66	Higher Certificate as Overseer Silver Medal for Accounts
13	Ved Swarup Gupta	Government C O High School Roorkee	3063	64	Higher Certificate as Overseer
14	Gajraj Singh Gupta	J A S High School, Khurja.	3043	63	
15	Laxmi Chand Gocl	E A S High School, Muzaffar nagar	3039	63	
16	Brahma Nand Sharma	Government High School Muzaffar nagar	3005	63	Ordinary Certificate as Overseer
17	Janki Prasad	N R E C Intermediate College Khurja	295	61	
18	Mam Chand	Meerut College Meerut	278	61	
19	Laxmi Chand	Gurnarain Khattri High School Cawnpore	2919	61	

1932.

No.	Names	Where educated.	Marks gained.	Per cent	Remarks.
OVERSEER CLASS, SECOND YEAR. (Full marks 4,800)					
1	Kula Nand Thaphyal	Partap High School, Tehri Garhwal	3653	76	<i>Higher Certificate as Overseer. Silver Medal and Rs 100 for General Merit. R. B. Kanhya Lal Silver Medal for best Indian Student who stands 1st in the class. Farley Memorial Silver Medal for Applied Mechanics. Silver Medals for Descriptive Engineering and Surveying Durga Das Dutt Silver Medal for best Indian student obtaining Higher Certificate</i>
2	Kar m Uddin	Government High School, Muttra	3415	71	<i>Higher Certificate as Overseer R. B. Kanhya Lal Silver Medal for Indian student who stands 2nd in the class. Silver Medal for Workshops Sullivan Memorial Silver Medal for Mechanics</i>
3	Vidya Dutt Nautiyal.	D A V. College, Dehra Dun	3358	70	<i>Higher Certificate as Overseer.</i>
4	Daya Ram	Mee ut College, Meerut	3333	69	<i>Higher Certificate as Overseer Silver Medal for Elementary Mathematics</i>
5	Shri Ram Joshi	Agra College, Agra	3325	69	} <i>Higher Certificate as Overseer</i>
6	Zakawat Ali Naqvi	Government Inter mediate College, Jhansi	3324	69	
7	Ram Sharan ..	S S M College, Chandausi	3314	69	

1932

No	Names	Where educated	Marks gained	Per cent	Remarks
8	Mitthan Lal .	D A V High School Muzaffar nagar	328	68	<i>Higher Certificate as Overseer Silver Medal for Drawing</i>
9	Vidya Swarup Verma	S S M Intermediate College Chandausi	328	68	<i>Higher Certificate as Overseer</i>
10	Kanhaya Lal	Meerut College, Meerut	328	68	
11	Meghraj Singi	Government High School Saharan pur	319	67	<i>Higher Certificate as Overseer Key Memorial Silver Medal and Rs 18 for Estimating</i>
12	Lakshpat Rai Singhal	N R E C Intermediate College Khurja	318	66	<i>Higher Certificate as Overseer Silver Medal for Accounts</i>
13	Ved Swarup Gupta	Government C O High School Roorkee	3063	64	<i>Higher Certificate as Overseer</i>
14	Gajraj Singh Gupta	J A S High School, Khurja.	3043	63	
15	Laxmi Chand Goel	E A S High School, Muzaffar nagar	3037	63	
16	Brahma Nand Sharma	Government High School Muzaffar nagar	3008	62	<i>Ordinary Certificate as Overseer</i>
17	Janki Prasad	N R E C Intermediate College Khurja	2978	61	
18	Mam Chand	Meerut College Meerut	238	61	
19	Laxmi Chand	Gurnarain Khattri II School Cawnpore	210	51	

1932

No	Names	Where educated	Marks earned	Per cent	Remarks
OVERSEER CLASS, SECOND YEAR.					
(Full marks 4,800)					
1	Kula Nand Thaplyal	Partap High School, Tehri Garhwal	3633	76	<i>Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit R B. Kanhya Lal Silver Medal for best Indian student who stands 1st in the class Fairley Memorial Silver Medal for Applied Mechanics Silver Medals for Descriptive Engineering and Surveying Durga Das Dutt Silver Medal for best Indian student obtaining Higher Certificate</i>
2	Kar m Uddin	Government High School, Muttra	3410	71	<i>Higher Certificate as Overseer R B Kanhya Lal Silver Medal for Indian student who stands 2nd in the class. Silver Medal for Work shops Sullivan Memorial Silver Medal for Mechanics</i>
3	Vidya Dutt Nautival	D A V College Dehra Dun	3358	70	<i>Higher Certificate as Overseer.</i>
4	Daya Ram	Meerut College, Meerut	3333	69	<i>Higher Certificate as Overseer Silver Medal for Elementary Mathematics</i>
5	Shri Ram Joshi	Agra College Agra	3325	69	<i>Higher Certificate as Overseer</i>
6	Zakawat Ali Naqvi	Government Inter mediate College, Hansi	3324	69	
7	Ram Sharan	S S M College Chandauri	3314	69	

1932

No	Names	Where educated	Marks gained	Per cent	Remarks
8	Mitthan Lal	D A V High School, Muzaffar nagar	3285	68	Higher Certificate as Overseer Silver Medal for Drawing
9	Vidya Swarup Verma	S S M Intermediate College, Chandausi	3291	69	Higher Certificate as Overseer
10	Kanhaya Lal	Meerut College, Meerut	3291	69	
11	Meghraj Singh	Government High School Saharanpur	3190	6	Higher Certificate as Overseer Keay Memorial Silver Medal and Rs 18 for Estimating
12	Lakhpal Rai Singhal	N R E C Intermediate College, Khurja	3187	66	Higher Certificate as Overseer Silver Medal for Accounts
13	Ved Swarup Gupta	Government C O High School Roorkee	3073	64	Higher Certificate as Overseer
14	Gajraj Singh Gupta	J A S High School, Khurja.	3013	63	
15	Laxmi Chand Goel	E A S High School, Muzaffar nagar	3030	63	
16	Brahma Nand Sharma	Government High School Muzaffar nagar	3008	63	
17	Janki Prasad	N R E C Intermediate College Khurja.	938	61	Ordinary Certificate as Overseer
18	Mam Chandi	Meerut College Meerut	938	61	
19	Laxmi Chand	Gurnara n Khattra H School Cawn pore	919	61	

1932.

No	Names	Where educated.	Marks gained.	Per cent	Remarks
20	Ram Manohar Lal	Queen's Inter mediate College, Benares	2912	61	Higher Certificate as Overseer.
21	Jado Rai Jain	Meerut College Meerut	2887	60	
22	Shankar Prasad Kala	Government High School Srinagar (Garhwal)	2876	60	
23	Harri Gopal Maithoi	N A S High School, Meerut	2851	59	
24	Hukam Chand	D Jain High School Baraut	2850	59	Ordinary Certificate as Overseer
25	Soran Lal Gupta	N R F C Inter mediate College, Khurja	2810	58	
26	Bachchu Lal Chaturvedi	K G Kashatriya High School, Hardoi	2778	58	
27	Harish Chandra	Meerut College, Meerut	2757	57	
28	Brij Manohar Nath Bhatna gar	Government High School Najibabad	2751	57	Ordinary Certificate as Overseer Silver Medal for Photo and Ferrotypes.
29	Lakshmi Chand Raizada	Deva Nigri High School, Meerut	2745	57	

1922

No	Names	Where educated	Marks gained	Per cent	Remarks.
30	Lakshmi Dat Thapliyal	Government High School, Srinagar (Garhwal)	273	57	Ordinary Certificate as Overseer
31	Balak Ram Sharma	Government High School, Buland shahr	272	57	
32	Krihna Gupta	Government High School Muzaffar nagar	269	56	
33	S Ansar Husain	Meerut College, Meerut	266	55	
34	Sh bha Ram Tayal	S M College Chan- dausi	265	55	
35	Anand Swarup Agrawala	Government C O High School, Roorkee	262	55	
36	Jugal Kishor Jain	D Jain High School, Baraut	252	53	
37	Bhag Mal Jain	K G Kshattriya High School Hardoi	250	52	
38	Phool Chand Jain	Government High School Muzaffar nagar	249	52	
39	Basudeo Sharma	Devanagri High School Meerut	246	51	
40	Hari Om Prakash	D A V High School, Muzaffar nagar	257	5	

1932.

No.	Names of students	Remarks
DRAFTSMAN CLASS, THIRD YEAR.		
1	Lahna Singh Chohan ..	Certificate as Draftsman, 1st Class, 1st prize of Rs 30 as best Draftsman. Silver Medal for General Merit and Independent Technical work
2	Om Prakash .	Certificate as Draftsman, 1st class, 2nd prize of Rs 20 as second best Draftsman.
3	Phool Singh ..	Certificate as Draftsman, 1st Class
4	Ghasi Ram Mital ..	Certificate as Draftsman, 2nd Class.
5	Jalil Ahmad Kazimi .	Ditto.
6	Ashwini Kumar .	Certificate as Draftsman, 3rd Class.
7	S. Tahir Husain Zaidi	Ditto.

1933.

No	Name	Where educated	Marks gained	Per cent	Remarks
1					India Prize of Rs 1,000 for General Proficiency Silver Medals for Descriptive Engineering, Surveying and Drawing General MacLagan's Prize of Books for Electrical Engineering and Physics Silver Medals for Laboratory Practice Group IV and Mechanical Engineering Sushula and J Mitra Memorial Silver Medal for Indian student who gets highest marks in Chemistry
2	Dhatri Saran Mathur	Agra College Agra	6412	79	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the most distinguished student who obtains the Honours Diploma, but does not obtain the Council of India Prize. Cautley Memorial Gold Medal for Mathematics and Calcott Reilly Memorial Gold Medal for Applied Mechanics
3	Bidri Nath Mengi B A (Jammu State)	Government College Lahore	6075	75	Honours Diploma as Civil Engineer Rai Bahadur Kanhaiya Lal Gold Medal for best Indian student who does not obtain the Thomason Prize
4	Harbans Lal Bhola	Government College Lahore	585	73	} Honours Diploma as Civil Engineer
5	Lall Chand Varma, B A	Norman Christian College, Lahore	5777	71	

1933

No	Name	Where educated	Marks gained	Per cent	Remarks
6	Afzal Ali Shah, B.A	Government College Lahore	5703	70	Honours Diploma as Civil Engineer
7	Balbir Singh	Ditto	5597	69	
8	Purtej Singh, B.A	Ditto	5582	69	
9	Prayag Sharan Shinghal	Meerut College, Meerut	5565	69	
10	Anand Kumar	Government College, Lahore	5514	68	
11	Balleshwar Nath Gupta, B.Sc	Agra College, Agra	5448	66	Honours Diploma as Civil Engineer Thomason Memorial Gold Medal and books worth Rs 25 for best Engineering design
12	Hasan Ali Abidi B.Sc	Teaching University of Allahabad	5359	66	Honours Diploma as Civil Engineer
13	Piara Lal Chopra B.A	Forman Christian College Lahore	5230	65	Ordinary Diploma as Civil Engineer
14	Tirlochan Singh	Ditto	5225	65	
15	Jai Dev Batra	D.A.V. College Lahore	5202	64	
16	Iqbal Singh Tandon B.A	Forman Christian College, Lahore	5180	64	
17	Madan Lal, B.A	D.A.V. College, Lahore	5145	64	
18	Mahavir Prasad B.Sc	University of Alla habad	5136	63	
19	Hira Singh	Khalsa College, Amritsar	5056	62	
20	Prakash Dev Chawla, B.A	Forman Christian College, Lahore	5019	62	
21	Krishna Chandra Govil, B.Sc	Agra College, Agra	5028	62	
22	Nand Lal Gupta	Allahabad Univer sity, Allahabad	5008	62	

1933

No	Name	Where educated	Marks gained	Per cent	Remarks
23	Jagdish Chandra Agarwal, B.A	Government College Lahore	4900	62	} Ordinary Diploma as Civil Engineer
24	Shanti . Sarup Chawla, B.A	Forman Christian College Lahore	4958	61	
25	Sant Ram Agarwal	Government College, Lahore	4944	61	
26	Bishan Saran Srivastava, B sc	Agra College Agra	4876	60	
27	Shyam Krishna Agarwala	Lucknow University, Lucknow	4868	60	
28	Mohammad Akbar Qureshi, B.A	Government College, Lahore	4803	59	
29	Brijraj Bahadur, B sc	Allahabad University Allahabad	4748	59	
30	M Abdul Latif	Islamia College, Lahore	4736	59	
31	Jiwan Datt B A	Government College, Lahore	4442	55	

1933

No	Names	Where educated	Marks Gained	P r cent	Remarks
OVERSEER CLASS, SECOND YEAR					
(Full marks—4300)					
1	Harbans Swaroop	N R E C Intermediate College Khurja	319	74	Higher Certificate as Overseer Silver Medal, and Rs 100 for General Merit R B Kanhya Lal Silver Medal for best Indian student who stands 1st in the class Sullivan Memorial Silver Medal for Mechanics Silver Medals for Elementary Mathematics and Surveying Durga Das Dutt Silver Medal for best Indian student obtaining Higher Certificate
2	Jagannath Prasad Varshney	Government Intermediate College Allahabad	3149	73	Higher Certificate as Overseer R B Kanhya Lal Silver Medal for Indian student who stands 2nd in the class Heavy Memorial Silver Medal and Rs 18 for Estimating Silver Medal for Project and Design
3	Chaman Lal	Meerut College,	3039	71	Higher Certificate as Overseer
4	Brijlal Gupta	" " "	" "	" "	" "
5	Darshan Lal Agarwal	D A V College Dhara Dun.	2931	69	Higher Certificate as Overseer
6	Shyam Lal Gupta	E A S High School, Muzaffar nagar	2944	68	
7	Atal Singh Tomar	Jat Veda High School Biraut	2897	67	Higher Certificate as Overseer Fairley Memorial Silver Medal for Applied Mechanics

1933

No	Name	Where educated	Marks gained	Per cent	Remarks
8	Sewa Ram	S D E High School Muzaffarnagar	2870	67	Higher Certificate as Overseer
9	Chandra Bhan Gupta	Government C O High School Roorkee	331	66	
10	Prakash Chand Gupta	Rashu Ram High School Saharan pur	280	63	
11	Prem Prakash Agarwala	Rajha Swami Educa- tional Institute Agra	2791	65	Higher Certificate as Overseer Silver Medal for Accounts
12	Manik Chand Gupta	N R E C College Khurja	2745	64	
13	Ganga Dayal Gupta	Meerut College Meerut	2728	63	
14	Gopi Lal	Nanik Chand A S High School Meerut	2710	63	Higher Certificate as Overseer
15	Nathu Singh Vaish	F. C. T. Meerut			
16	Kamta Prasad Kandwal	G. S. S. S. Meerut			
17	Lalit Mohan Chakravarti	Government High School Nagpur	64	67	Ordinary Certificate as Overseer Silver Medal for Drawing
18	Ram Svarup Gupta	Government High School Bijnor	2645	67	Higher Certificate as Overseer
19	Bir Singh	Government Inter- mediate College Moradabad	2633	61	
20	Chatar Sanjun	D J an High School Birat (District Meerut)	2618	61	
21	Ram Saran Das Gupta	Meerut College Meerut	2600	61	
22	Puran Mal	Government High School Najibabad	2580	61	

1933

No	Nam's	Where educated	Marks gained	Per cent	Remarks
23	Bishamber Das	Government High School, Muzaffar nagar	2583	60	Higher Certificate as Overseer
24	Bhagwat Prasad Sharma	S M College Chandausi	2567	60	
25	Munshi Lal Sangal	Meerut College, Meerut	2553	59	
26	Ratan Lal Gupta	Meerut College, Meerut	2544	59	
27	Uggar Sen Garg	Government High School, Muzaffar nagar	2508	59	
28	Tara Datt Sanwal	Government Intermediate College Almora	2486	58	Ordinary Certificate as Overseer
29	Bankey Lal	N R E C Intermediate College, Khurja	2403	56	
30	Khushi Ram Mittal	Edward High School, Muzaffar nagar	2387	55	
31	Shiva Charan Das Gupta	Meerut College, Meerut	2381	55	
32	Lajpal Singh	Government High School, Muzaffar nagar	2371	55	
33	Sukhvir Singh	Dhian Singh Memorial High School, Kanth	2314	54	
34	Jaipal Singh	Government Intermediate College Etawah	2275	53	
35	Udaibir Singh	Government High School, Muzaffar nagar	2270	53	
36	Brahma Nand	Agra College, Agra	2226	52	
	Ram Prasad Gupta (Jodhpur State)	Jaswant College, Jodhpur	2797	65	Higher Certificate as Overseer

1933

No	Names of students	Remarks
DRAFTSMAN CLASS THIRD YEAR		
1	Kartar Singh	First class certificate as Draftsman in 1st Division Silver Medal and Rs 30 for General Merit
2	Lakhpat Rai Gaumata	Second class certificate as Draftsman in 2nd Division Second prize of Rs 20
3	Gurdial Singh	Third class certificate as Draftsman in 3rd Division
4	Muhammad Na mul Haq	Ditto

1934

No	Names	Where educated	Marks gained	Per cent	Remarks
CIVIL ENGINEER CLASS THIRD YEAR (Full marks—8090)					
1	Shanti Swarup	Meerut College, Meerut	5897	73	Honours Diploma as Civil Engineer Council of India Prize of Rs 1 000 for General Proficiency Calcott Reilly Memorial Gold Medal for Applied Mechanics Silver Medal for Civil Engineering Theoretical General MacLagan's Prize of Books for Electrical Engineering and Physics Silver Medal for Mechanical Engineering
2	Surup Chand Katoch B A	Forman Christian College, Lahore	5847	72	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the Most Distinguished Student who obtains the Honours Diploma but does not obtain the Council of India Prize Silver Medal for Surveying
3	Omprakash S Chawla M A	Ditto	5707	71	Honours Diploma as Civil Engineer Rai Bahadur Kanhaiya Lal Gold Medal for best Indian Student who does not obtain the Thomason Prize Sushila and J Mittra Memorial Silver Medal for Indian Student who obtains the highest marks in Chemistry Silver Medal for Laboratory Practice Group IV

1934

No	Names	Where educated	Marks gained		Remarks
			Marks	Per cent	
4	Govind Das Agrawal, B A	Morris College, Nagpur	5570	69	Honours Diploma as Civil Engineer
5	Manohar Lal Nanda	Government College, Lahore	5567	69	Ditto
6	Hari Gopal Varma	Meerut College, Meerut	5354	66	Ditto
7	Bhuneshwari Dayal Mathur	LaMartinière College, Lucknow	5272	65	Ordinary Diploma as Civil Engineer Silver Medal for Drawing
8	Ram Chand	D A V College, Lahore	5212	64	Ordinary Diploma as Civil Engineer
9	Om Prakash Mital	Meerut College, Meerut	5168	64	Ditto
10	Jagdishwar Prasad Mital, B sc	Ditto	5117	63	Ditto
11	Karam Narain Arora	Government College, Lahore	5049	62	Ditto Cautley Memorial Gold Medal for Mathematics
12	Uma Shankar, B sc	Allahabad University, Allahabad	5015	62	Ordinary Diploma as Civil Engineer
13	Muhammad Hameed ud din, B sc	Muslim University, Aligarh	4951	61	Ordinary Diploma as Civil Engineer, Thomason Memorial Gold Medal and books worth Rs 25 for Best Engineering Design
14	Harish Chandra Vigh, B A	Dayal Singh College, Lahore	4900	61	Ordinary Diploma as Civil Engineer
15	Durga Prasad Rastogi, B sc	Meerut College, Meerut	4939	61	Ditto
16	Shri Dev Singh Jawanda	Dayal Singh College, Lahore	4918	61	Ditto
17	Mahesh Chandra Gupta, B sc	Lucknow University, Lucknow	4900	61	Ditto

1934

No	Names	Where educated	Marks gained	Per cent	Remarks
18	Akhtar Husain Hanfi	Meerut College, Meerut	4899	61	Ordinary Diploma as Civil Engineer
19	Jagdish Prasad Mital	Ditto	4859	60	Ditto
20	Dev Dyal Soni, B A	Forman Christian College, Lahore	4849	60	Ditto
21	Krishna Murari Gupta, B sc	Agra College, Agra	4793	59	Ditto
22	Mulkh Raj Ba ja, B A	Government College, Lahore	4703	58	Ditto
23	Vinayak Ba puji Tawadey, B sc	The Hindu College, Delhi	4587	57	Ditto.
24	Gopal Krishen Singh Vij, B A	Government College Lahore	4576	57	Ditto
25	Balbhadar Sain Mal (Bahawal pur State)	Sadiq Egerton Col lege, Bahawalpur	4444	55	Ditto
26	Raj Nath Widgo, B A	Forman Christian College, Lahore	4423	55	Ditto
27	Rama Nand Saksena B sc	Barilly College, Ba reilly	4202	52	Ditto Passed, vide Govern ment Order, United Provinces Education Deptt, no 201C/XV, dated July 17, 1934.
28	Raj Nath Sharma, B A	D A V College, Lahore	4162	51	Ordinary Diploma as Civil Engineer

1934

No	Names	Where educated	Marks gained	Per cent	Remarks
OVERSEER CLASS, SECOND YEAR (Full marks—4200)					
1	Vishnu Datt	Victoria High School, Agra	3164	75	Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit Rai Bahadur Kanhya Lal Silver Medal for best Indian student who stands 1st in the class Durga Dass Dutt Silver Medal for best Indian student obtaining Higher Certi- ficate Silver Medals for Descriptive Engi- neering Surveying Ac- counts and Workshops Sullivan Memorial Silver Medal for Me- chanics
2	Syed Inam Husain Naqvi	Meerut College Meerut	3066	73	Higher Certificate as Overseer Rai Bahadur Kanhya Lal Silver Me- dal for Indian student who stands 2nd in the class Silver Medal for Drawing
3	Lakshmi Nidhi Gupta	Raj Rishi College Alwar	3037	72	Higher Certificate as Overseer Silver Medal for Elementary Mathe- matics Kavy Memorial Silver Medal and Rs 18 for Estimating Farley Memorial Silver Medal for Applied Mechanics
4	Joti Prasad Vital	Meerut College, Meerut	3000	71	Higher Certificate as Overseer
5	Inam ul Haq Ansari	Intermediate Col- lege Muslim Uni- versity Aligarh	2536	60	Ditto

1934

No	Names	Where educated	Marks Gained	Per cent	Remarks
6	Jagdish Prasad Mittal	Meerut College, Meerut	2664	63	Higher Certificate as Overseer Silver Medal for Project
7	Krishna Chand ra Pant	Ghananand High School, Mussoree	2613	62	Higher Certificate as Overseer
8	Jagdish Prasad Vaish	Meerut College Meerut	2544	61	
9	Jamini Mohan Chakravarti	Kayastha Pathshala Intermediate Col lege, Allahabad	2542	61	
10	Prakash Chand ra Khatri	Kashi Ram High School, Saharanpur	2465	59	
11	Dhanpat Rai Jain	Government Inter mediate College, Etawah	2446	58	
12	Trilok Chandra Jain	H M High School, Amlala	2435	58	
13	Roop Nandan	G C O High School Roorkee	2353	56	
14	Sita Ram Lal	L D Meston High School Ballia	2338	56	
15	Shiva Shankar	Government College, Ajmere	2337	56	Ordinary Certificate as Overseer
16	Ganesh Dutt Chandola	Measmore High School Garwal	2265	54	
17	Harji Krishna Treyedi	Manohar Lal High School Fyzabad	2205	53	
18	Jeebarden	Ewing Christian Col lege Allahabad	2195	52	
19	Kulwant Rai Jain	Government High School Saharanpur	2161	51	
20	Shyam Sunder Lal	D A V College, Delra Dun	2123	51	
21	Anand Behari Lal	Government High School, Muzaffar nagar	2100	50	

1934

No	Names of students	Remarks
DRAUGHTSMAN CLASS THIRD YEAR		
1	Panna Lal	First class certificate as Draughtsman in 1st Division Silver Medal and Rs 30 for General Merit
2	Jog Dhian	First class certificate as Draughtsman in 1st Division Second Prize of Rs 20
3	Chandra Bhan Mudgal	First class certificate as Draughtsman in 1st Division
4	Atina Saran	Ditto ditto
5	Kashmira Lal	Ditto ditto

1935

No	Names	Where educated	Marks gained	Per cent	Remarks
1	Chandar Prakash Malik	Forman Christian College, Lahore	6124	76	CIVIL ENGINEER CLASS 3RD YEAR (Full Marks, 8090) Honours Diploma as Civil Engineer Coun- cil of India Prize of Rs 1000 for general proficiency Thoma- son Memorial Gold Me- dal and books worth Rs 25 for best Engi- neering Designs and Silver Medal for Me- chanical Engineering Sushula & J Mitra Memorial Silver Medal for Indian Student who obtains Highest Marks in Chemistry
2	Jai Krishna, B Sc	" " "			
3	Kailash Chandra Sood	Agra College, Agra	5997	74	shed student who ob- tains the Honours Diploma but does not obtain the Council of India Prize Cantley Memorial Gold Medal for Mathematics and Calcott Reilly Memorial Gold Medal for Appli- ed Mechanics Silver Medal for Survey and Drawing and Labora- tory Practice Group IV Honours Diploma as Civil Engineer Rai Bahadur Kanhya Lal Gold Medal for best Indian student who does not obtain the Thomason Prize or Council of India Prize General Maclean's prize of books for Electrical Engineering and Physics Silver Medal for Descriptive Engineering

1935

No	Names	Where educated	Marks gained	Per cent	Remarks
4	Jagdish Rai Tandon, B A	D A V College Lahore	5794	72	Honours Diploma as Civil Engineer
5	Arthur Richard Mitchell	Bishop Cotton Col lege Simla	5350	66	Honours Diploma as Civil Engineer
6	Prem Nath Kumra B A	Hindu College Delhi	5207	64	Ordinary Diploma as Civil Engineer
7	Prithvi Nath Srivastava	Lucknow University	5173	64	Ditto
8	Puran Singh Sagoo	Government College Lahore	5066	63	Ditto
9	Hem Raj	Agra College, Agra	4960	61	Ditto
10	Kashi Saran Misra	Government Inter mediate College Fyzabad	4876	60	Ditto
11	Mahabir Sahai Mathur	St Stephens Col lege Delhi	4751	59	Ditto
12	Sardar Lal	Agra College Agra	4606	57	Ditto
13	Abdul Fayyaz Quraishi	Muslim University Aligarh	4505	56	Ordinary Diplomas as Civil Engineer does not qualify in equita tion
14	Nasir Sultan Al Khan	Allahabad Univer sity Allahabad	4419	55	Ordinary Diploma as Civil Engineer
15	Hans Raj Varma	Agra College Agra	4400	54	Ordinary Diploma as Civil Engineer
	Harbans Lal	Forman Christian College Lahore	5403	67	Honours Diploma as Civil Engineer

1935

No.	Name	Where educated.	Marks gained	Per cent.	Remarks
OVERSEER CLASS, SECOND YEAR (Full Marks, 4200)					
1	Anand Swaroop Mangal (Ajmer Merwara)	Government College, Ajmer	2969	71	Higher Certificate as Overseer Silver Medal Medal and Rs 100 for General Merit. Rai Bahadur Kanhya Lal Silver Medal for best Indian student who stands first in the class Durga Das Dutt Silver Medal for best Indian student obtaining Higher Cer- tificate Silver Medals for Surveying, Work- shops, Fairley Memo- rial Silver Medal for Applied Mechanics
2	Saiyid Agha Masud ul Hasan	Agra College Agra	2956	70	Higher Certificate as Overseer Rai Baha- dur Kanhya Lal Silver Medal for Indian student who stands second in the class
3	Rameshwar Nath Goel	Meerut College, Meerut	2893	69	Higher Certificate as Overseer
4	Gopi Chand	Ditto ..	2810	67	Higher Certificate as Overseer Heavy Memo- rial Silver Medal and Rs.18 for Esti- mating Silver Medal for Descriptive Engi- neering and Sullivan Memorial Medal for Mechanics
5	Dhoni Ram Garga	Government High School, Saharan- pur	2811	67	Higher Certificate as Overseer Silver Medal for Accounts
6	Tara Chand Parde	Government Inter- mediate College, Etawah.	2806	67	Higher Certificate as Overseer Silver Medal for Elementary Mathematics.

1935

No	Names	Where educated	Marks gained	Per cent	Remarks
7	Jagdish Prasad	Dharamsamarj Inter mediate College, Aligarh	2730	65	Higher Certificate as Overseer
8	Ghulam Dastgir	Government Inter mediate College Moradabad	2704	64	Ditto
9	Johari Mal Jain (Jodhpur State)	Jaswant College Jodhpur	2121	62	Higher Certificate as Overseer Not quali fied in Equitation
10	Umrao Singh Sharma	MacDonnell High School Jhansi	2558	61	Higher Certificate as Overseer
11	Iqbal Bahadur Astbana	Agra College Agra	2503	60	Ordinary Certificate as Overseer
12	Chandi Prasad	D A V High School, Cawnpore	2479	59	Ditto
13	Sukl bi Prasad	Government High School Mainpuri	2461	59	Ditto
14	Shiva Sharan	D S M High School Kanth	2451	58	Ordinary Certificate as Overseer Silver Medal for Project
15	Ram Chandra Jaulari	Government High School Budaun	2420	58	Ordinary Certificate as Overseer Silver Medal for Drawing
16	Hari Singh Rat hore (Jodhpur State)	Jaswant College Jodhpur	2386	57	Ordinary Certificate as Overseer
17	Kalash Chan dra Mahesh	Meerut College, Meerut	2291	55	Ditto
18	Manohar Lal Gupta	G C O High School Roorkee	2260	54	Ditto
19	Satya Prakash Gupta	S M College Chan dausi	2214	53	Ditto
20	Mangal Sen	Government High School, Saharan pur	2210	53	Ditto

1935

No	Names	Where educated	Marks gained.	Per cent.	Remarks
21	Brij Kishore	Government High School Hapur	2210	53	Ordinary Certificate as Overseer
22	Krishna Behari Lal Saksena	Christ Church Col lege, Cawnpore	2203	52	Ditto
23	Jai Deo Sharma (Jodhpur State)	Jaswant College Jodhpur	2174	52	Ditto
24	Hari Mohan Mathur	Government High School Rai Bareilly	2137	51	Ditto
	Inder Prasad Gupta	Government High School Muzaffar nagar	2393	57	Ditto

1935.

No.	Names of students	Remarks.
	DRAFTSMAN CLASS, THIRD YEAR	
1	Sudarshan Lal	Second Class Certificate as Draftsman in second division.
2	Amar Nath	Second Class Certificate as Draftsman in second division.

1933

PERCENTAGE OF MARKS OF STUDENTS.

The following table shows the percentages of marks gained by the various classes for the last five years and the numbers that qualified —

Year	Civil Engineer Class									Overseer Class					
	3rd year			2nd year			1st year			2nd year			1st year		
	Highest Marks	No Qualified	Average Marks	Highest Marks	No Qualified	Average Marks	Highest Marks	No Qualified	Average Marks	Highest Marks	No Qualified	Average Marks	Highest Marks	No Qualified	Average Marks
1929 30	78	28	65	82	31	65	79	31	65	76	33	61	81	43	63
1930 31	81	31	66	78	31	65	86	31	64	79	42	61	73	39	61
1931 32	79	31	67	85	31	66	77	29	68	76	40	61	79	37	61
1932 33	84	31	66	75	28	63	80	16	66	74	37	62	78	23	61
1933 34	73	28	62	77	16	63	75	16	63	75	21	60	72	15	59
1934 35	76	16	64	79	16	66	78	18	66	71	25	60	80	29	56

ANNUAL REPORT

SESSION 1934-35

FROM

MR MAHABIR PRASAD, B SC, M I E, I S E,

OFFG PRINCIPAL,

THOMASON COLLEGE OF CIVIL ENGINEERING,

ROORKEE,

TO

THE DEPUTY SECRETARY TO GOVERNMENT,

UNITED PROVINCES,

EDUCATION DEPARTMENT

Dated Roorkee, July 15, 1935

SIR,

I HAVE the honour to forward herewith the annual report of the Thomason College of Civil Engineering for the session 1934-35, together with the usual statement of accounts for the financial year ending March 31, 1934

ADMINISTRATION

2 The following official and non-official gentlemen were members of the Thomason College Advisory Council during the year :—

SIR W L STAMPE, K T, C I E, I S E, M L C, Chief Engineer Development, and Secretary to Government, Irrigation Branch, Public Works Department, United Provinces President

Rai Bahadur Chuttan Lal, I S E , Chief Engineer to Government, Buildings and Roads Branch, Public Works Department, United Provinces

Mr H R Harrop, M A , Director of Public Instruction, United Provinces

Mr G McC Hoey, B A , B E , M C , A M I C E , Superintending Engineer, Public Health Department, United Provinces, representative of the Institution of Civil Engineers, London

Shaikh Muhammad Ali M L C , United Provinces Legislative Council

Syed Zaheer Ali, M L C , United Provinces Legislative Council

Raja Jwala Prasad representative of the Institution of Engineers, India

Rai Bahadur Bawa Natha Singh, Superintending Engineer, Punjab Irrigation Branch of the Public Works Department representative of the Punjab Government

Mr H J Amoores I S E , Principal Thomason College Secretary

The representative of University Education has not yet been nominated

No meeting of the Advisory Council was held during the year

A meeting of the special committee appointed by Government to report on the revision of Syllabus and Course of Study Civil Engineer Class was held in the College on January 6 and 7, 1935. The proceedings of the meeting have been forwarded to the Government of the United Provinces. No decision of the Government has yet been received.

COLLEGE BOARD OF STUDIES

3 This board met several times during the session and discussed matters connected with the internal working of the College

COLLEGE STAFF AND CHANGES

4 When the College reopened on October 22 1934 after the long vacation the College Staff consisted of the following gentlemen —

Mr H J Amoore ISE	Principal
Raj Bahadur D D Mal ISE	Professor of Civil Engineering I
Mr B D Puri MA (Cantab)	Professor of Pure and Applied Mathematics
Mr H T Cumming	Assistant Professor of Survey and Drawing
Mr J Crawford	Headmaster Overseer Class and off Assistant Professor of Mechanical and Electrical Engineering
Mr P Chakravarti	Lecturer in Pure and Applied Mathematics
Mr Anand Sarup	Lecturer in Physics
Mr P C Sen Gupta	Lecturer in Mathematics
Mr M L Misra	Lecturer in Electrical Engineering
Mr K I Bhattacharya	Lecturer in Chemistry
Mr P S Dhatnagar	Officiating Lecturer in Drawing
Mr I I Sharma	Lecturer in Mechanical Engineering
Mr S R Singh	Lecturer in Survey
Babu Phumm n Ram	Instructor Overseer Class
Babu J w n Lal	Ditto
Pandit Raghunandan Lal	Instructor Draftsman Class

Capt J Barnett

Personal Assistant to Principal
and Superintendent of the
College Office

Mr P C Sen Gupta, Lecturer in Mathematics was transferred as Head Master Overseer Class, and took over charge of the Class from Mr J Crawford who was relieved of the dual charge on February 11, 1935

Mr H J Amore, Principal, proceeded on leave out of India from March 15, 1935 Professor Mahabir Prasad who joined the College on the forenoon of December 7, 1934, as Professor of Civil Engineering officiated as Principal with effect from March 15, 1935

Captain J Barnett proceeded on leave on full average pay from May 13, 1935, for 1 month and 13 days and is still on leave

Mr P L Sharma, Lecturer in Drawing proceeded on leave out of India for 6 months in continuation of College vacation of 1934 but had to return earlier relieving Mr P S Bhatnagar officiating Lecturer on December 8 1934

Major A M McLean superannuated on March 28, 1935

Dr Raj Nath of the Benares Hindu University was appointed Lecturer in Geology and Mineralogy for the month of May, 1935

Mr Banwari Lal gave lectures in accounts to the 3rd year Civil Engineering students from May 20 1935, to May 31, 1935 and to the 2nd year Overseer students from June 17, 1935 to June 25, 1935

DEPARTMENTS

5 The Departments of the College for the Civil Engineering Course are as noted in the Annual Report for the previous session, i.e. —

(a) Civil Engineering incorporating Survey, Drawing and Chemistry

b) Pure and Applied Mathematics incorporating Physics

(c) Mechanical and Electrical Engineering

CIVIL ENGINEERING

6 In the Civil Engineering Department during the session the tuition by lectures was supplemented by a number of designs. Designs for the following were prepared —

(a) By the 3rd year Civil Engineering students —

(a) Masonry Weir

(b) Reinforced Concrete Retaining Wall for retaining earth

(c) Reinforced Concrete Retaining Wall (Counterfort type)

(d) Flume meter

(e) Venturary Head

(f) Reinforced Concrete Arch

(g) Masonry Dome

(h) Reinforced Concrete Beam Bridge

(a) By the 2nd year Civil Engineering students—

(a) Roof truss

(b) Plate girder bridge

(c) Chimney

(d) Grillage foundation

(e) Steel Tank

(f) Lattice Girder bridge

(g) Brickwork Syphon

(h) High Dam

(i) Canal Fall

(j) Channel dimension

PROJECTS

7 The 3rd year Civil Engineering students had to execute during the second half session the usual engineering projects. The minor project was set by Professor D. D. Mal and was for a bye pass road from Mangalore to Pirankhali.

The major project was set by Khan Bahadur Abdul Aziz, I. S. E. Superintending Engineer Development Circle, United Provinces and was for irrigating with canal water the country lying between the Hindon River and the Krishna Nadi to the south of Budhana Landhli Road in the Meerut and Muzaffarnagar districts.

Further details of the major project are given in my convocation address a copy of which is included in this report.

SURVEY CAMP

8 The usual triangulation survey camp of three weeks duration for the 2nd year Civil Engineering students was held in January 1931 at Jaurisi, a place close to Landhaura Railway Station. The students enjoyed the life at camp though the hours of work were long. Unfortunately for some days bad weather intervened and kept them in tent.

VISITS TO WORKS

9 Visits to works were arranged and made by both the 2nd and 3rd year Civil Engineering students as far as funds permitted. The 3rd year Civil Engineering students visited the Salwa Power House and Tule Well Lucknow Water Supply and Sewage disposal Cawnpore Cement Corporation.

The 2nd year Civil Engineering students paid visits to —

- 1 Suspension Bridge at Lachhmanjhula
- 2 Protective work at Balawah
Salawa Power House and tube wells
- 4 Water Works Meerut
- 5 Road Construction at Ghazirbad
- 6 Dellsu Sewage and Water Works and Okhla Canal Headworks
- 7 Bhimgoda Headworks
- 8 Durla Sugar Factory

Second year Civil Engineering students also went to Lansdowne for studying structures of rocks

Visits to selected works under construction and engineering workshops are beneficial to the students and add a great deal to their engineering knowledge. As long as Government grant for such visits remains small, viz., Rs 700 it is not possible to arrange for many visits.

The special feature of the year under report was that the students of the Overseer Class 2nd year were also given opportunity to visit the construction of the Salawa Power House

DEPARTMENT OF MATHEMATICS, APPLIED MECHANICS AND PHYSICS

10 Mr P C Sen Gupta a Lecturer of the Department of Mathematics and Applied Mechanics was transferred to the staff of the Overseer Class as Headmaster in the beginning of the second half session of the College. The periods in Mathematics and Applied Mechanics of the Overseer Classes are now taken by him. The transfer has not affected the efficiency of the department. The department is still efficient.

can arise only when either the Professor or Lecturer may have to go on leave

The work of the department has been carried on as heretofore

DEPARTMENT OF MECHANICAL AND ELECTRICAL ENGINEERING

11 Two new machines have been added to the workshops, an engraving machine and electric welding outfit Both machines have proved very useful and will greatly increase the efficiency of the workshops both tutorially and practically.

This year the engraving on the silver medals was done in the College Workshops

HEALTH

12 On the whole the health of the staff and students has been very satisfactory

Two students viz Mohammad Azim 1st year Overseer Class had to be sent away for rest as he was suspected to be suffering from tuberculosis of lung The other student Rameshwar Nath Kashvap, 2nd year Overseer Class was recommended leave for going to hills on account of his bad health from a very severe and constant attack of headache and has been allowed to join next session

CIVIL ENGINEER CLASS STUDENTS' CLUB

13 The Civil Engineer Class Students Club has passed through another successful year All the Civil Engineer Class students were members The Club affairs are managed by a Committee elected by its members the President who is a member of the staff merely keeps a watch over finances and general discipline The finances of the club in spite of several

entertainments and At Homes arranged are sound. The general behaviour of the members has been good. For the last few years the number of students admitted to the Civil Engineer 1st year Class has fallen considerably and consequently the membership of the Club has suffered. The income having thus declined economies have had to be practised in its activities and improvements. The Managing Committee rendered all possible help to the Club. The Honorary Secretary Mr S. K. Jain took keen interest in club matters.

MILITARY TRAINING

14 The usual military training of the University Training Corps and A. F. I. was carried out during the year. A certain amount of time was spent in firing on the Rifle Range. The U. T. C. were not able to attend Camp again this year but the A. F. I. attended the Light Motor Patrol Camp in October. The U. T. C. is as essential to maintain the health of students as other outdoor games. Efforts should be made to keep this training going in the College.

OVERSEER CLASS

15 The standard of this class was maintained and the instructions given covered the various syllabi. The 2nd year students designed the following Civil Engineering structures —

- (1) Steel truss
- (2) Remodelling an old building
- (3) A culvert
- (4) A distributary
- (5) A distributary syphon
- (6) T Beam Roof (R. C.)

and also executed a project for a Civil Engineer Class Mess Building with Electric fittings, water supply, sanitary installation and an approach road. The project was set by Captain J. Barnett, M.C.S.

BUILDING AND GROUNDS

16 Owing to reduction in allotment, due to financial stringency, it has not been possible to do all the necessary repairs to College Buildings and Grounds but every effort has been made to do as much as funds allowed.

There are bungalows which have thatched roofs. These residences require immediate attention of Government. If funds are allotted heavy expenditure on renewal of thatch almost every year would be saved.

The following works were carried out in the financial year ending March 31, 1935 —

(1) A portion of the work of Remodelling Water Supply to College Main Building and fire fighting apparatus at a cost of Rs 320

(2) Providing electric installation in a portion of Staff Quarter no 27/2 at a cost of Rs 65

(3) Providing electric installation in a portion of Staff Quarter nos 26/1, 26/2 and 27/1 at a cost of Rs 2,037

(4) Re roofing two front verandahs in the Main College Building at a cost of Rs 976

(5) Re roofing the block of Outhouses attached to Civil Engineer Class, Hostel no 40 at a cost of Rs 2,395

There are several emergent demands pending with Government for allotment of funds but owing to the general

depression resulting in the financial crisis they were not present in the latter days mentioned.

WATER SUPPLY

17 The question of water supply for the College is a problem which remains to be solved. The college supply is at present obtained from the following sources —

- (1) Ganges Canal
- (2) Three tube wells
- (3) From surface wells

Funds for two more tubewells and for remodelling the distribution system are badly needed. This will remedy serious inconvenience which is being felt due to want of a proper water supply system specially in the bungalows situated in Mahkapore.

ELECTRIC INSTALLATION

18 In last year's report it was said that if Government would sanction Rs 5,300 for a duplicate generator set there will be an annual saving of Rs 1,600. For want of funds the situation is the same this year.

DISCIPLINE

19 Discipline has been maintained but due to there being no guaranteed appointments for which the students can work, there is not that keenness of competition amongst the students as in the old year. The students generally speaking want to obtain their diplomas and that is all. No untoward events have occurred which call for special comment.

LIBRARY

20 The indexing is going on very slowly. I have only one clerk who works for two hours a day and can only

about 20 books. The work of indexing will be accelerated when Government sanction for a library clerk is received. Unless this happens, I am afraid, it will take many years before the whole library can be indexed.

BOOK DEPOT

21 The Book Depot is controlled by the Superintendent, Government Printing and Stationery, and text-books required are obtainable by the students at a special reduced rate of 12½ per cent off published prices. The Roorkee branch of the Government Press is giving us all possible assistance.

THE 'LION' MAGAZINE

22 The 'Lion' Magazine which was started three years ago is still plodding on its weary way. The enthusiasm with which it was launched has not been kept up and with the passing out of the students who started it, the interest taken by the students generally has been very little indeed. There is always a dearth of articles. Both the Staff and students have to be asked very often before they would at all contribute to the pages of the magazine and even then, it appears to me that the "Lion" is not considered to be worth much thought or consideration. No body willingly helps but most decri it. It is very disheartening to carry on the work under the present circumstances and I am afraid the magazine may die of inanition unless the new first years class produces some enthusiastic workers in its cause.

THOMASONIAN SOCIETY

23 The aim of the Thomasonian Society is to cultivate the faculty of exact expression in speech and to provide for

rational discussion of scientific technical engineering literary and social subjects

Five meetings of the society were held in the year under report. At two meetings lectures were given by Dr B J Allen M D on influence of diet on health. Mr Bhatta charva Lecturer of Chemistry spoke on Earthquakes. The Lacey Prize was awarded to Kashi Saran Misra.

ENTRANCE EXAMINATION

24 The competitive entrance examinations for all classes were held from June 1 to 8 1935. The tables show the centres at which the examination was held, numbers which competed, were successful etc.

ENTRANCE EXAMINATIONS

JUNE 1935

Centre	Number seated														
	Civil Engineer Class						Overseer Class					Draftsman Class			
	No	Province or State	H	M	C	No	Province or State	H	M	C	N	Province or State	H	M	C
Roorkee	9	U P	8	1		24	U P	23	1		5	U P			
Lahore	7	Punjab	7												
Agra	1	U P			1	4	U P	4							
Agra						1	Jodhpur State	1							
Agra						2	Ajmer Merwara	2							
Jucknow						1	U P	1							
Allahabad	1	U P	1												
Nainital	2	U P	1		1										
Total	20		17	1	2	32		31	1		5		5		

This year provinces and states guaranteed to pay the cost of training the numbers of students shown below, should their candidates be successful

Province or State	Civil Engineer Class	Overseer Class	Draftsman Class
Punjab	7		
Military department	3		
Jodhpur State	1	1	
Ajmer Merwara		3	.

The statement below shows the numbers of candidates who sat for classes named since 1923 to date

Class	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
Civil Engineer	207	244	272	215	245	203	252	260	221	61	47	50
Overseer	109	213	249	207	156	236	267	290	234	89	62	77
Draftsman	25	19	40	36	23	28	23	8	11	3		2

The number of candidates fell greatly in 1932, and have continued small since. This is due to the stoppage of recruitment to the various Government Engineering Services and to the general state of the labour market. This year there is a slight increase in the number of candidates for all the three classes.

STUDENTS' APPOINTMENTS

25 As in previous year the College made every secure training for successful students who passed

year and enquiries were made from all prospective employers. The students exhibited greater inclination towards Government service. Of the 28 successful 1934 Civil Engineer student —

1 joined Irrigation branch of United Provinces Public Works Department

1 was trained at Raja Jwala Prasad's Farm

1 joined Central Provinces Public Works Department

3 joined the Railways (4 with North Western Railway and one with East Indian Railway)

1 joined Military Engineering Services

1 joined Bahawalpur State

The remaining three did not wish to take up the training

Here it may not be out of place to mention that in the Public Service Commission examination recently held out of six posts five were secured by Thomason College students. This result compares very favourable with the result of other Engineering Colleges in India and was probably never excelled.

From the Overseer Class 2nd year 21 students qualified last year. The first four joined the apprenticeship in the Public Works Department Irrigation branch, fifth in the Buildings and Roads branch and the sixth in this College. They will be completing their training period by the end of July.

Out of the rest three obtained unpaid apprenticeship in the Irrigation branch but 2 have withdrawn leaving for some time. The rest did not take training.

Five students passed out from the 3rd year. One is in service and two have secured apprenticeships. The rest did not take any training.

CLASS WORK

26 All 3rd year Civil Engineering students—16 in number—have obtained their Civil Engineering diplomas this year—six the Honours Diploma and 10 the Ordinary Diploma. The Council of India Prize of Rs 1 000 for General Proficiency and the Thomason Gold Medal and Books (to the value of Rs 25) for the highest number of marks obtained in the minor and major projects were won by C P Malik.

In the Overseer Class 25 students out of a class of 27 students were successful 10 obtained the Higher Certificate and 15 the Ordinary Certificate. One was expelled as he was found using unfair means in the Final Examination and one was unable to sit owing to ill health. Anand Swaroop Mangal passed head of the 1st. The silver medal for project was won by Shiv Sharan.

In the Overseer Class 1st year, 3 students out of a class of 33 students failed and one student could not sit owing to ill health.

In the draftsman class all students 2 in number have been successful both obtained the certificate in the 2nd division. One student of the Draftsman Class 2nd year was unfortunately drowned while bathing in the Ganges Canal.

A complete list of all prizes and medals given at the Convocation and Prize giving on July 15 1935 is attached to this report (Appendix II).

RECREATION

27 Annual Reports 1934—During the athletic season general interest and enthusiasm prevailed. This led to a high standard of achievement and some keenly contested events were witnessed at the Annual Sports held on December

21 1934 The Lion Trophy was won by S C Keelan by one point from A R. Mitchell The 2nd year Civil Engineer Class won the Relay Race after a hard fight with the 3rd year Civil Engineer Class and the 3rd year Engineer Class was successful in the Tug of War

The cross country Challenge Cup was won this year by Hari Singh Rathore of 2nd year Overseer Class who also won the Barnett Cup

The Vizianagram Cup for the best Indian Athlete was won by Harbans Lal Civil Engineer Class 3rd year student

Tennis—The popularity of tennis is on the increase, and this game is played fairly regularly The standard of play at the major meetings was not as high as that witnessed in former years The performances of Messrs Harbans Lal, C P Malik and S C Keelan have been good throughout and specially in the Olympic Contests

Cricket—This game is rather on the downward grade at the College We find it very difficult to select an eleven as the majority of players are of less than average ability The number of matches played were few

28 **Olympic Contests**—This annual contest with the Royal Engineers was held in March this year The College was beaten rather more easily than was expected Speaking of the season more generally—all players showed sportsman like spirit The defeat was borne cheerfully and there is no reason to suppose that there is a decline either of interest or talent in games C P Malik of the 3rd year Civil Engineer Class had the distinction of representing the College in all the Olympic games

29 **Regatta, 1935**—The Regatta was held on June 1, 1935 and for the 1st time for many years a duststorm did

appear The entries were lower than usual, but the competition was keen S C Keelan, of 2nd year Civil Engineer Class performed the feat of winning all four races, ably assisted in three of the events by his partners The Double Sculls resulted in a dead heat, the crews being A R Mitchell and S C Keelan versus L R Keelan and R K Kochhar The 2nd year Civil Engineer Class won the Batch Fours and Mr A R Mitchell won the Boating Cup for the best oarsman in the 3rd year Civil Engineer Class

29 Special Challenge Cups.—The Harcourt Butler Cup for the best student in work and athletics has been won by C P Malik and the Sandes Cup for sports and games by L R Keelan of Civil Engineer Class 1st year

In conclusion it may be pointed out that each student receives individual attention and assistance from the Staff The Staff were ever willing and ready to give special attention and help to students who encountered difficulties connected with their studies

ANNUAL CONVOCATION AND PRIZE GIVING

30 The Annual Convocation and Prize-giving was held on Monday, July 15, 1935, at 11 a m in the College Convocation Hall, when Sir W L Stampe, K T, C I E, I S E, Chief Engineer and Secretary to Government, United Provinces, Public Works Department, Irrigation branch kindly presided

The Principal Mr Mahabir Prasad, I S E, opened the proceedings with the following address

SIR WILLIAM STAMPE, LADIES AND GENTLEMEN —

OUR President today is so well known to all of us that no formal introduction is necessary

We tender to you Sir, our heartfelt congratulations on the well deserved honour of Knighthood which His Majesty the

King Emperor has so graciously bestowed on you The Thomason College feels proud of your Honour as you have been so closely associated with its activities. As a professor of Civil Engineering of this College from 1920 to 1924, the interest you took in the students and the high standard of education you then imparted will always be remembered. Since 1933 you have been the president of the Advisory Committee.

It is due to your experience and skill that the College has been able to weather the hard days of reductions and retrenchments. As the head of Irrigation Department you have been doing the greatest good to this College by giving employment to its passed students. On behalf of the whole Staff, it gives me great pleasure to heartily welcome you, and to thank you for the honour you have done us by accepting the presidency of the College Annual Convocation.

I also thank the visitors who have found time to support us in our proceedings and on behalf of the Staff and students I extend to them a very hearty welcome also.

Staff—I took over charge as a Professor of Civil Engineering on December 7, 1934, and on Mr. Amoores's proceeding on leave took over charge as Principal on March 14, 1935.

Mr. J. E. Crawford continued to hold the dual charge of Assistant Professor of Mechanical and Electrical Engineering and Head Master, Overseer Class, till February 11, 1935, when he made over the charge as Head Master to Mr. P. C. Sen Gupta, Lecturer in Mathematics.

Mr. P. L. Sharma, *VRINDA*, Lecturer in Drawing, proceeded on leave out of India from October 22, 1934 and resumed his duties on December 8, 1934. Mr. Prem Sheel Bhattacharya, a passed student of the Civil Engineer class, officiated lecturer in drawing during Mr. Sharma's absence.

I am sorry to say that Captain J Barnett, Personal Assistant to the Principal and Superintendent of Office, had to proceed on leave from May 13, 1935, on account of ill health. We wish him an early recovery.

We are sorry to lose the services of Rai Bahadur P Devi Datta Mal, I S E, who at the end of this session will be reverting to the Irrigation Department, after having served as a Professor of Civil Engineering for a period of 2 years. We wish him the very best for the future.

I would stress the urgent necessity for the filling up of this appointment without delay. The officer appointed may be informed before the vacations are over, so that he may come prepared to commence his duties fully as soon as the next session opens.

During this session outside lectures were given as follows by —

(a) Sir Wilham Stampe on Irrigation Development

(b) Khan Bahadur Abdul Aziz on tube wells

(c) Mr K Brown gave 2 lectures on Electrical Engineering

(d) Mr L P Misra, Deputy Agent, East Indian Railway, very kindly gave a lecture on Railways

(e) Dr Raj Nath, D Sc, of the Benares Hindu University, gave lectures to 2nd year students for one month on Geology and Minerology

(f) Mr Banwari Lal, M A, of Meerut College, gave lectures on accounts to the Civil Engineer and Overseer Classes

Visit to Works—The students of this college went on to visit works as follows

Third year class Civil Engineer went to Meerut Lucknow, Cawnpore and visited the Lucknow water works, Sewage disposal works, and cement concrete road work.

The second year Civil Engineer class went to Meerut, Ghaziabad, Hardwar, Rishikesh, Delhi and visited Salawa Power House under construction, Tube-wells in various stages of construction, Cement concrete road under construction, Suspension bridge at Lachhman Jhula, Bhim Goda Head Works, Ganges Canal. At Delhi they visited construction and training works at Wazirabad for Jumna River, Pumping station at Chandrawal, Paterson Filter Plant, etc.

The Overseer class visited the construction of the Salawa Power House.

All the students took great interest in the works they visited. The questions they asked showed that they are keen observers. On return the students were required to write notes which showed that they had made good use of the opportunities they had of observation.

The following is a brief review of the work of the past session —

Civil Engineer class—I am glad to be able to report that no student has failed in any of the Civil Engineer classes.

16 Civil Engineer students are successful in the final examination and 6 have gained Honours Diploma.

The Council of India Prize of Rs 1,000 for general proficiency has been won by C P Mallik. He obtained 75½ per cent marks out of a total of 8,090 marks.

The Thomson Prize of Rs 250 has been won over by Jai Krishna the next in order of merit.

So keen was the competition that though Jai Krishna was at the top of the class, throughout the course, he was beaten only at the last lap in the final examination.

The Rai Bahadur Kanhaya Lal gold medal has been won by Kailash Chandra Sood.

The Harcourt Butler Prize for work and play has this year been won by C P Malik

The much coveted project prize, the Thomason memorial gold medal for the best Civil Engineering design has been won by C P Malik. He is to be heartily congratulated on the excellent work submitted. Only a few marks separated Jagdish Rai Tandon and Kailash Chand Sood who secured the 2nd and 3rd place respectively. All these students are to be congratulated.

This year the main project was for irrigating, with canal water, the country lying between the Hinden River and the Krishna Nadi to the south of Budhana Kandla Road in the Meerut and Muzaffarnagar District. This was to be done by constructing a new channel from the Eastern Jamna Canal at some point north of Kandla, crossing the Krishna Nadi at a suitable place and traversing the Hinden Krishna Doab.

The paper was set by Khan Bahadur Abdul Aziz, Superintending Engineer Development Circle.

The following is an extract from his report.

"1 The alignment of Channels is generally correct, in spite of the longer length of the main channel, its off take at miles 75 furlong 5 is more economical as it reduces the height of the aqueduct on the Krishna Nadi and reduces both the length and height of embankment on both sides of the river."

"2 In irrigation channels specially small ones towards their tails the alignments should follow the water sheds as closely as possible. The main consideration with almost all has been to align in straight reaches. This is only a minor

consideration and is to be considered in case of large channels only

3 In river crossing works in alluvial soils it is always advisable to found on wells. Many students have provided merely ordinary concrete foundation for the Krishna river crossing. The Designs of aqueduct and other masonry work are generally correct and well worked out.

4 Reports leave much to be desired they should have been more concise and instead of explaining the general principles of developing irrigation works they should only give necessary explanation of the works as actually designed.

The projects generally and those of numbers 11 Chinha Prakash Malik 9 Jagdish Rai Tandon 2 Kailash Chand sood 4 Jai Krishna particularly have been worked out very well. It is gratifying to note that 6 students out of 16 obtained over 78 per cent marks in project.

The 2nd year students are requested to note the remarks in the project Examiner's comments so as to be able to prevent these defects occurring in their works during the coming year.

The minor project was set this year by Professor D. D. Mal and was for a byepass road from Manglore to Piran Kaler. This involved a crossing of the Solani and taking a road through a country full of ravines. The student tackled this project very well on the whole.

In the Overseer class 2nd year all the students have qualified 10 obtaining the higher certificate. Anand Sarup Mangal stands first obtaining the silver medal and Rs 100 for general all round merit and Sved Aga Masud ul Hasan stands second.

The Silver medal for the project goes to Shiva Sharan

In the first year class—3 students failed

I am sorry to have to report that one student of the 2nd year overseer class was expelled as he was found to be cheating the staff, during the final examination

Draftsman class—There were 2 students and both have passed

At a previous convocation the opinion was expressed that so long as the standard of education of this College was maintained Roorkee students have nothing to fear from open competition in the open market with the other institutions of this country and with those who had returned after having a systematic course of instruction in the West That opinion has been justified by last year's results of the examination held by the Public Service Commission for the whole of India for appointments to the Imperial Services This year too it gives me pleasure to record that out of 6 appointments 5 have been secured by the Thomason College students including the first 2 in each list

I might also mention in passing that in the last year Indian Civil Service Examination held in London, one of our old students Mr Chand Mal who had passed out 1st from this college in 1933 passed 2nd and is now under training at Oxford

To conclude—We cannot claim any spectacular achievement, but I think we had a year of successful work, in which the best traditions of the college were maintained, and we are sending out very good students into the profession

The Thomasonian Society—The aim of the Thomasonian Society is to cultivate the faculty of exact expression in speech and to provide for rational discussion of scientific, technical engineering literary, and social subjects

Five meetings of the society were held in the year under report. At two meetings lectures were given by Dr B J Allen M D on influence of diet on health. Mr Bhattacharya Lecturer of Chemistry spoke on Earthquakes. The Lacey prize was awarded to Kashi Saran Misra.

The competitive entrance examinations for admission to all classes were held in June last. Fifty five candidates sat for the Civil Engineering Entrance Examination including the 1 gentleman cadet from Indian Military Academy. 21 including the Indian Military Academy candidates were successful. 2 Indian Military Academy gentleman cadets passed the special entrance examination in December last and will join the college in October next. Thus there will be 23 students in the 1st year Civil Engineering Class.

Ninety candidates appeared for the Overseer class entrance examination. 32 were successful.

In the Driftsman class 7 sat and 5 were successful.

On the whole there is improvement in the number of students appearing in the competitive examination.

If Government could see their way to guarantee a few posts in the Provincial service there will be no dearth of Students, and there will be greater keenness in competition.

Health—The health of the students of both the classes during the session has been very satisfactory. Unfortunately two students of the Overseer Classes one from the 1st year and the other from 2nd year had to withdraw from the college on grounds of health.

I am convinced that this good result of health is due to the keenness and attention towards sports games the military training to the Civil Engineering classes and physical training to the Overseer classes.

It will not be out of place here to mention that to give the students and the staff fresh and pure milk cream and butter, the college maintains its own dairy. Delivery is given at the customers' doors, with all possible cleanliness.

Sports—The Annual sports were held on 21st December '34. The weather was ideal and some keenly contested events were witnessed. The staff were "At Home" to the Station and old boys of the college. The Laon Trophy was won by S. C. Keelan by one point from A. R. Mitchell, who was awarded the Runner-up Challenge Cup. The 2nd year Civil Engineer Class won the Relay Race after a hard fight with the 3rd year Civil Engineer class and the 3rd year Civil Engineer class was successful in the Tug of War. The Cross Country Run Challenge Cup was won by Hari Singh Rathore of the 2nd year Overseer Class who also won the Barnett Cup. The Vizianagram Cup for the best Indian Athlete was carried away by Harbans Lal of 3rd year Civil Engineer class while the Sandes Cup for games and sports goes to L. R. Keelan of 1st year Civil Engineer class.

Regatta—The Annual Regatta was held on June 1, 1935. The staff was "At Home" as usual. The weather was favourable for the first time for many years and a dust storm did not disturb the events. The entries were lower than usual but a keen spirit of competition was alive, among the competitors. S. C. Keelan of 2nd year Civil Engineer Class performed the amazing feat of winning all four races ably assisted by his crew. The Double Sculls resulted in a dead heat the crews being A. R. Mitchell and S. C. Keelan versus L. R. Keelan and R. K. Kochhar. The 2nd year Civil Engineer class won the batch fours and A. R. Mitchell won the Boating Cup for the best oarsman in the 3rd year Civil Engineering Class.

Olympic Contest—The Annual Olympic Contest with the Royal Engineers was held early in March this year. This consists of matches in Cricket, Football, Hockey, Tennis and squash. This year the Royal Engineer Officers won the challenge cup. They won this contest 9 times in the last 17 years while the College won it 8 times.

Tennis—The Tennis and squash tournaments were played as usual. Harbans Lal won the Tennis singles and Jai Krishna and C. P. Malik won the doubles. All the three were of the 3rd year Civil Engineer class. The squash singles was won by Harbans Lal of the 3rd year and the doubles by Harbans Lal and J. R. Tandon of the 3rd year.

All the games had their due share of students' time and were played regularly. Matches in hockey, football and cricket were arranged between local teams and the college with varying success. Everything possible has been done to enhance the keenness of students in games and sports and I am glad to observe that students took an active interest. Their prowess in the field of sports was as marked as in the class room.

The usual military training of the University Training Corps and Auxiliary Force (India) has been carried out with firing on the Rifle Range. The University Training Corps could not attend camp again this year but the Auxiliary Force (India) attended the light Motor Petrol Camp in October last.

Equipment—Rapid progress is being made in hydro electric works in these Provinces under your control and this has opened a field of employment to successful students of this College.

Mr. Amore drew attention in the last convocation to the fact that the rules issued by United Provinces and the Punjab Governments relating to their new Hydro-electric services and

not accept the Thomason College Engineering Diploma as a qualification for entry into these services

Government was pleased to appoint a special committee with yourself as its President to reorganize the course of studies and syllabi for the Civil Engineering class of this college. The matter is still under consideration, and we hope that your committee will be able to so reorganize the studies, that students of this college may be eligible to Hydel appointment

Though we are not equipped as well as we wish for the up to date teaching in Electric Engineering, it is interesting to examine the results in Electric Engineering of the Public Service Commission Examination. In the Post and Telegraph Examination, where electric engineering is a compulsory subject, the 1st four highest marks are of Thomason College boys. Taking the first 20 students, 13 places are taken by Thomason College boys. In Indian Railway Service of Engineers Examination, Electric Engineering is not a compulsory subject. The first 2 places go to Thomason College and 12 positions out of the 18 are held by our boys.

I would also invite attention to the College treatises which form the basis of the instruction in Engineering subjects in the College studies. These books are badly in need of revision, which has been pending for want of funds.

The question of water supply for the College is a problem which remains to be solved. The College supply is at present obtained from the following sources -

- (1) Ganges canal,
- (2) Three tube-wells,
- (3) From surface wells,

Funds for two more tube wells and for remodelling the distribution system are badly needed. This will remedy serious inconvenience which is being felt due to want of a proper

water supply system specially in the bungalows situated in Malikpore

Another matter which I would like to bring to notice is that of the electrical installation. In last year's convocation report it was said that if Government would sanction Rs 5,300 for a duplicate generator set there will be an annual saving of Rs 1,600. For want of funds the situation is the same this year.

Apprenticeship—Of the 28 students who qualified in 1934 from Civil Engineer class 3rd year, 16 joined the Irrigation Branch and the Hydro electric Department of the United Provinces 14 student Engineers for a year's practical training. One was trained in Raja Jwala Prasad's Dharamnagri Farm, one under Central Provinces Government, five in railways, one in Military Engineering Service, one in Bahawalpur State and three did not wish to take up the training.

From the Overseer class 2nd year 21 students qualified last year. The first four joined the apprenticeship in the Public Works Department, Irrigation Branch, 5th in the Buildings and Roads Branch and the 6th in this College. They will be completing their training period by the end of July.

Out of the rest 3 obtained unpaid training in the Irrigation Branch but 2 have withdrawn after working for some time. The rest of the students did not take any training.

Five students passed out from the Draftsman class 3rd year. One is in service and two have taken up apprenticeships. The rest did not take any training.

I am thankful to the Chief Engineers and the Officers of the Public Works Department, Railways and the other private firms who took keen interest in the training of the stu-

I congratulate all students, who today are receiving the various diplomas, certificates and prizes. I wish them every success in their future career.

Mr H J Amoores has cabled to me offering his congratulations and good wishes to all successful students.

I thank all members of staff for their kind support which they have given me.

Mr President I have now much pleasure in asking you to address a few words to the students before giving away the prizes.

MR MAHABIR PRASAD, GENTLEMEN OF THE THOMSON COLLEGE, LADIES AND GENTLEMEN—

I MUST first thank you for the kind reception and generous remarks you have accorded me this morning. When Mr Amoores asked me to preside on this occasion I welcomed the opportunity of reviewing some of the past achievements of our College and of outlining what I visualize to be your future opportunities in connexion with the engineering developments recently sanctioned by the Legislature. I congratulate you Sir Mr Amoores and Your Staff and the successful students on the results of a good year's work.

As you have said, Sir, I have more than an official interest in this College, I have the personal recollection of the four years I was privileged to serve on its staff with their pleasant association with your students in work and games. I can also testify to the benefit that a practical engineer long separated from the academic side, derives from teaching the theory of his profession to men of the keen calibre that this College produces. I mention this for the encouragement of those of our engineers who are inclined to fight shy of academic appointments.

Not only that but the organized college games and athletics especially the annual olympic contests with our friends the Sappers and Miners form a necessary part of that training of both staff and student which has gone so far to the making of so many of our most efficient engineers. It has been hinted that the college tends to over rate the importance of games. No criticism was ever less justified. For those whose careers consist largely in fighting the forces of nature for the creation and preservation of works of public utility, games are an essential part of the college course. It is a truism to say that they harden and fit us physically for a stern outdoor life, they teach us how to endure defeat in good spirit to respect our opponents and to win without undue exultation. Best of all perhaps they train us to mix easily with our fellow men a trait essential later in successful public life. I shall shortly have the pleasure of personally congratulating this year's successful students in work and play.

I would like on this occasion to express my personal appreciation of the services rendered me at different times by many former students of this College which would have made it easy for any Chief Engineer to advance his department. The acid test of true service is help given in a tight corner. On two such occasions in my own career I applied for Roorkee engineers whose capacity for work and play I had known in the College and in both cases the choice was more than justified. Shoulder to shoulder with their British trained colleagues they saw us through.

But since those prosperous days the College has passed under the shadow of the economic depression and it must have seemed to you for four years now as if your efforts only served to add to the glut of trained engineers in the local markets. The suspension of recruitment during the recent retrenchment years has hit the College hard and I

like to express my admiration of the fortitude with which your late colleagues have borne these hard times. But it is a long road that has no turning and it is a pleasure to be able to announce to you today that we in the irrigation service, at any rate, appear at last to have reached the corner. Thanks largely to the development policy, recruitment on a modest but steadily increasing scale has again been opened. Out of the 24 passed college students from the 1931 to 1933 sessions who were still serving in various temporary and, I fear, low paid capacities on our staff, no less than 12 will in all probability be absorbed into permanent appointments during the current year thus reducing the block by 50 per cent. This at any rate, is some reward for their patient services. Further it is anticipated that 7 additional permanent sub divisional posts will have to be created during the next two years to staff the tube well enterprise which is now nearly half completed. Not only this, but the parallel development of the hydro electric project and the projected extension to Fyzabad must inevitably create still further opportunities for the useful employment of our civil engineers. It would seem, therefore, that 4 or 5 engineers will have to be recruited in our provincial service annually for the next few years. Although we cannot yet speak for our neighbours in the Punjab who used to be such generous supporters of the college product, we may at least hope that, being now the happy possessors of a balanced budget, the Punjab Government will shortly resume recruitment.

You Mr Principal, evidently expect me to make some announcement today *in regard to the re equipment of the College and the suggested alteration of the college course with a view to equipping our engineers to take a more active part in the electrical side of the profession.* The report of the 1935 Committee is still under the consideration of Govern-

ment but whatever the decision may be it is practically certain that your standard of electrical teaching will shortly be raised. With the rapidly increasing use of electricity both for irrigation and agriculture it is essential that the irrigation engineers should be put in a better position to deal with the problems which must hereafter arise in his career. Not only must he be familiar with the principles of power generation on our rivers and canal falls but more important still he must have sufficient knowledge of modern plant to be able to appreciate the operation of irrigation projects by means of electrical power. It is in fact becoming impossible to draw a hard and fast line between the civil and the electrical phases of our profession. Do not imagine that the electrical specialist will ever be unnecessary to design and control our intricate plants. Far be it from me to underestimate the importance or the skill of the small band of electrical engineers whose untiring efforts have in five years built up the Ganges grid. But the irrigation engineer of the future especially in this province will be required to know more about electrical matters than has been the case in the past. Any proposals for the better co-ordination of electrical and civil engineering tuition in this College should therefore receive the support of us all.

Present developments are of such importance to your future careers that I shall venture to trespass on your time to outline briefly the lines on which events are likely to proceed within the next four or five years. You are aware of a system of tube well irrigation growing up in your midst by which within two years more than half a million additional acres will be irrigated yearly at rates commercial both to the State and the cultivator in connexion with the Ganges grid scheme. These activities have involved the creation of four temporary and two permanent divisions which naturally increase the demand for the trained engineer.

But this is only the fringe of the enterprise as we visualize it. The inevitable result of furnishing these electrical amenities in the west has been to create a demand for similar facilities in the east of the province. Although the Himalayan water power resources are too distant to be economically employed at this juncture, there is the possibility, remote it is true, of ultimately harnessing these immense forces either for displacing or supplementing the smaller steam power stations which must meanwhile energise the initial stages of the projected eastern grid until larger loads are built up with the development of agricultural industries. I need not repeat what has been publicly stated in various departmental communiques. The essential facts are that in the absence of mineral and major industrial resources, the prosperity and importance of our province can only be advanced by means of extended agricultural facilities resulting in a lowering of the cost of production. Such facilities cannot be afforded without extended irrigation. Extended irrigation on a wide scale is no longer economically possible without cheap power and the collateral development of our important underground water resources, as well as those of our eastern rivers flowing at low levels. In the sands often barely 20 feet below our arid plains there flow silently towards the sea millions of tons of water yearly. In the Himalayas to the north and the Vindhya to the south, there pass to the sea millions of horse power yearly. It is for you by your courage and ingenuity to link these two potential forces for the benefit of millions of cultivators who are at present living on the verge of starvation. But the field is not exclusively for the irrigation engineer. The resulting increase of production must be accompanied by improved transport amenities—better roads, more bridges of a cheaper type, and the provision of tramways in sugarcane tracts such as are rapidly expanding around our tube wells. It will be for those of you who control the future

engineering policy of this province, to develop its resources on these and perhaps even wider lines and I cannot invoke your assistance and co-operation too strongly in the early appreciation and solution of these immense problems

It is customary on this occasion, to conclude one's remarks with a few words of advice as to the conduct of your subsequent careers. If there is one point I would especially impress upon you it is that you should go out into the engineering world armed with constructive ideas and ambitions, with the will to advance your profession for the good of your country—which here in the United Provinces lies almost entirely as I have said in the benefit you can render to the cultivator, comprising as he does the vast majority of the population. At the present moment the air is full of new ideas—it is becoming electrified. When an idea occurs or is suggested, to you for development—concentrate first on its positive potentialities rather than on finding reasons against it. After convincing yourself that the project is sound bring yourself to believe that it can be carried out and then appreciate and surmount the difficulties that militate against its success. There is an all too prevalent tendency in the east—partly due to climatic reasons and partly to the play of human or inter departmental factors—to adduce reasons for not proceeding with a scheme rather than for going ahead. For almost half a century—for instance—the Sarda Canal project lay pigeon holed in our offices because of alleged fears of water logging, of malaria and a score of other—what may be called—negative reasons. The hydro electric scheme was not advanced until Raja Jwala Prasad's time largely because it was held that the Ganges Canal must necessarily be kept closed in the monsoon. Tube wells could not be installed on a large scale because the sub soil water—if it would not run short altogether—would be too expensive to lift to the surface. I could quote a dozen instances. But at length a more po

view was taken and Government accepted that these projects could proceed. Let us remember that if the largest of them—the Sarda Canal—cannot at once pay its way, the benefit rendered to the country side by the increased produce of two years alone more than outweighs the total charge incurred in interest until the canal eventually becomes directly remunerative.

I do not suggest that you should yourself project or encourage others to put forward unprofitable or doubtful enterprises which by a manipulation of the technical figures might be made to appear as sound at any rate to the uninitiated. Do not quote me as advocating the letting loose of a procession of so-called white elephants stalking over the plains of these provinces debt-ridden as they already are. Use discretion in your financial analysis and avoid wild cat schemes liable to be put forward to advertise their promoter at other people's expense. But on the other hand in a half-developed province such as ours where there is undoubtedly scope for further engineering advancement I beg of you to approach your work with open constructive minds looking for opportunities to benefit your countrymen by the development of sound ideas.

Lastly having made up your own mind as to the financial and technical soundness of your scheme go ahead quickly and boldly and build well. We have great examples of the best construction before us here in Roorkee. I would quote one instance. When it was proposed in 1929 at the commencement of the Ganges grid scheme by doubling the height of the old Bahadurabad falls to secure 20 instead of 10 feet head the plans were shown at site to Sir Malcolm Hailey. He asked us how we dared to double the pressure on this ancient fall. The reply was that being one of Sir Thomas Cautley's works the risk could be safely taken. This is the

greatest tribute one engineer can pay to another. Let your construction reputation be such that at some future time, your successors can with equal confidence impose a double burden on your work.

Finally, in wishing you of the third year godspeed at the outset of your careers I would remind those of you who are about to enter our services that you will shortly work under new conditions. To use a homely simile, you will sign on in the same ship under the old flag but with a different management. But the course is similar and the port the same—the good service of your country. Knowing your work and your college traditions for 25 years as I do, I can say with full confidence that at any rate the engineers of this ship of State will not let their country down.

I have the honour to be,

SIR,

Your most obedient servant,

MAHABIR PRASAD, B SC, M I E, I S E,

Offg Principal.

*Stat ment showing the expenditure of the Thomason College
of Civil Engineering, Roorkee, for the year 1933-34*

(1) College departments

<i>Pay of officers</i>		Rs	a	p
1	Pr nc pal (Non voted)	21 832	15	0
2	Princ pal (Voted)	1 110	0	0
3	Professors (Non voted)	14,338	2	0
4	Professors (Voted)	28 945	7	0
5	Other officers (Voted)	81 074	1	0
6	Med cal Officer	893	9	0
7	Allowance to Instructor	400	0	0
8	Deduct ons for emergency cut (Voted)	—0 184	10	0
9	D tto (Non Voted)	—1 959	13	0
Total { Voted		1 06 238	7	0
{ Non voted		34 011	4	0
<i>Pay of establ shment</i>				
10	Instructors	7 880	0	0
11	Foremen draftsmen mechanics etc	8 400	7	0
12	Passed app ent ce overseers	3 202	4	0
13	Clerks	11 371	0	0
14	Servants	7 804	13	0
15	Med cal establ shment	364	12	0
16	Deduct ons for emergency cut	—1 378	0	0
Total (Voted)		37 065	2	0
<i>Allowances and honorar a</i>				
17	Travelling and other allowances { (Voted)	2 635	1	0
		610	15	0
18	Cost of passages (Voted)	81	0	0
19	Deduct ons for emergency cut	—14	0	0
20	D tto	—14	0	0
Total { Voted		0	1	0
{ Non voted		598	15	0

Statement showing the expenditure of the Thomason College of Civil Engineering, Roorkee, for the year 1933-34—(concl'd).

Supplies and services.

				Rs	a	p.
21	Purchase and erection of machinery workshops	..		16	459	4 3
22	Purchases from England	} Laboratory	.. {	558	4	0
23	Purchases in India			6	070	7 0
24	Maintenance of generating station	..	..	6	815	8 0
25	Survey expenses	..	..	5	170	7 6
26	Material for industrial class	..	..	784	10	0
27	Excursion charges of students	..	..	1,457	15	0
28	Stores (in India)	..	..	903	6	0
29	Prizes and fees	..	..	4	354	2 0
30	Other supplies and services	..	..	3	623	0 6
31	Customs duty on stores	..	..	200	7	0
Total (Voted)				44	398	6 9

Contingencies.

32	Contract	..	..	11,002	5	7
33.	Pay of menials	..	..	9,905	8	0

Non contract.

34	(a) Purchases from England	..	..	1,503	4	0
35.	(b) Purchases in India	..	..	3	019	10 6
Total (Voted)				25	430	12 1

Total, College department	{	Voted	..	2,16,414	6	10
		Non voted	..	34,810	3	0

<i>Deduct—</i> Contribution from other Governments for training of students	—73,590	0	0
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Total, Roorkee College (Voted)	..	1,42	838	6	10
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(Non voted)	..	34	810	3	0
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*Statement of the annual accounts of the Thomason
College Workshops for 1933-34.*

Receipts.	Amounts	Expenditure.	Amounts.
	Rs. a. p.		Rs. a. p.
Manufacture	1,797 1 0	Salaries of Assistant Professor of Mechanical and Electrical Engineering	12,813 1 0
Electric light charges	5,989 1 0	Salaries of Lecturer in Electrical Engineering.	6,263 5 0
		Salaries of Lecturer in Mechanical Engineering	5,641 4 0
		Salaries of Foremen and Assistant Foremen.	7,000 3 0
		Salaries of Lunsman.	595 0 0
		Salaries of Mistri, Water-works.	471 7 0
		Salaries of Store-keeper.	417 13 0
		Salaries of Electrical Laboratory attendant.	376 1 0
		Salaries of Electrical Laboratory boy.	192 0 0
		Salaries of Workshop Guards.	630 0 0
		Travelling allowance	141 14 0

*Statement of the annual accounts of the Thomason
College Workshops for 1933-34—(continued)*

Receipts	Amount	Expenditure	Amount
	P a p	<i>Manufacture</i>	Rs a p
		Purchase and Erection of Machinery Workshops	14 493 6 3
		Maintenance of Generating Station	6 811 3 0
		Laboratories and class charges	1 735 17 6
		Electrical Laboratory	553 0 0
		Cost of energy	3 603 9 6
		Water works	1 614 10 0
Total	7 783 2 0	Total	63 309 7 3

Manufacture account

(Including credited sales of stock and instruction charges for students)

Cash receipts	1 797 1 0	Opening balance	88 1 0
Unrealized balance	73 10 0	Labour	142 9 6
		Stock (including credited sales)	1 523 9 9
		Direct charges	46 15 6
		Profit on private works	64 7 3
Total	1 870 11 0	Total	1 870 11 0

Stock account

Opening balance	3,033 7 6	Issues to works including credited sales	1 523 9 9
Cash purchase during the year	16 10 11	Closing balance	2 121 8 8
Profit			
Total	3 650 2 5	Total	3 650 0

*Statement of the annual accounts of the Thomason
College Workshops for 1933-34—(concluded)*

Receipts	Amount	Expenditure	Amount
<i>Energy account</i>			
	Rs a p		Rs a p
Cash receipts	5 989 1 0	Cost of energy	3 603 9 6
Unrealized balance		Profit	2 385 7 6
Total	5 989 1 0	Total	5 989 1 0
<i>Tools and plant account.</i>			
Opening balance	1 19 997 5 0	**Depreciation	12 647 3 0
* Purchases during the year	7,192 6 0	Closing balance	1,14 54 ⁹ 8 0
Total	1 27 189 11 0	Total	1 27 189 11 0
*Purchase and erection of Machinery workshops	4 066 12 6	**Cost of materials auctioned from the following Laboratories and shops during 1933-34	
Maintenance of Generating Station	389 3 9	Heat Engine Laboratory	7 2 6
Maintenance and Repairs	1 073 12 6	Material Testing Laboratory	1 4 6
Water works	547 8 0	Electrical Laboratory	157 16 2
Electrical Laboratory	218 1 3	Engine and Boiler Machine shop	11 9 8
Laboratories and class charges	897 0 0	Fitting shop	44 0 0
		Carpenter shop	28 2 0
		Stores .	7 12 0
Total	7 19 6 0	Total	15 6 0
			2 3 3 1

TABLE I

Showing comparative results of entrance examinations for five years

Name of class	1930			1931			1932			1933			1934		
	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total
Civil Engineer Class															
Examined	4	33	37	3	191	194	5	63	68	1	46	47	1	40	41
Passed		45	45		30	30	1	15	16	1	9	10	1	18	19
Admitted { Privileged Unprivileged		30	30		20	20	1	14	15	1	9	10	1	17	18
Overseer Class															
Examined	1	59	60		222	222		87	87		62	62		71	71
Passed		56	56		79	79		29	29		31	31		31	31
Admitted { Privileged Unprivileged		40	40		38	38		24	24		30	30		28	28
					1	1					1	1		5	5

TABLE II

Civil English and Indian candidates from 1922 to 1934

Provinces	Came up for the examination		Passed the Entrance Examination		Passed the Final Examination		Total of all classes		
	Engineer Class	Overseer Class	Engineer Class	Overseer Class	Engineer Class	Overseer Class	Came up	Passed the Entrance Examination	Passed out
United Provinces	102	1949	203	646	101	375	3001	849	596
Uttar Pradesh	109	2	245	4	189	2	1054	249	18
North West Frontier	21	3	5		9		24	5	5
Bengal	8		1		1		8	1	1
Central Provinces	42		2		5		42	3	5
Burma	4		3		3		4	3	3
Central India	1			1			4	1	
Rajputana	14		3		1	1	28	5	2
Baluchistan	2						3		
Indian States	48	31	8	12	5	6	73	90	11
Bihar and Orissa	9	1	1		2		10	1	2
Dell	42	8	7	1	6		50	8	6
Ajmer Merwara	2	7		4		2	9	4	2
Total	2274	2042	478	670	359	386	4316	1148	745

Note—For figures from 1890 to 1921 please refer to Thomason College Calendar for 1930

TABLE III

Comparative statement showing numbers in College on April 1 of each year

Name of class	1931			1932			1933			1934			1935		
	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total
Civil Engineering Class	2	26	28	1	21	22	1	26	27	2	28	30	3	27	30
Apprentice Overseers		6	6		8	8		6	6		6	6		6	6
Overseer Classes		83	83		79	79		61	61		54	54		60	60
Draftsman Class		22	22		17	17		11	11		10	10		3	3
Total	2	203	205	1	195	196	1	154	155	2	138	140	3	116	119

TABLE IV
Comparative statement of religious denominations of the Staff and students

Class	1930-31				1931-32				1932-33				1933-34				1934-35			
	Christians	Hindus	Muhammadians	Total	Christians	Hindus	Muhammadians	Total	Christians	Hindus	Muhammadians	Total	Christians	Hindus	Muhammadians	Total	Christians	Hindus	Muhammadians	Total
Staff	12	45	7	64	8	37	7	52	6	36	3	45	6	34	4	44	5	35	3	43
Students	2	178	19	199	1	171	16	188	1	136	12	149	2	111	11	124	3	99	11	113
Apprentice Overseers ..		0		0	..	8		8		4	2	6		6		6		4	2	6
Total	14	229	26	269	9	216	23	248	7	176	17	200	8	151	15	174	8	138	16	162

TABLE V.

Comparative statement showing the transactions of the various College funds from April 1, 1934 to March 31 1935 (the property of the funds is excluded)

Name of fund	Balance on April 1 1934	Receipts during the year 1934-35	Total	Expenditure during the year 1934-35	Balance on Mar 31 1935
	Rs a p	Rs a p	Rs a p	Rs a p	Rs a p
Mess	243 8 11	481 1 0	724 9 11	219 5 8	175 1 3
Recreation	580 1 11	795 0 11 8	8,530 13 7	7,337 13 3	1,193 0 4
Indian Engineer Class Club	654 8 0	3 13 9 2 10	3,793 10 10	3,002 3 6	791 7 4
Overseer Class					
Recreation and flowing room	258 5 8	2,148 15 4	2,407 5 0	1,921 3 3	486 1 9
Total	1,736 8 6	13,719 14 10	15,456 7 4	12,510 9 8	2,945 13 8

TABLE VI

Statement showing the number of candidates registered and the number who have obtained employment during 1930 to 1934

Grade	1930		1931		1932		1933		1934	
	Registered	Appointed	Registered	Appointed	Registered	Appointed	Registered	Appointed	Registered	Appointed
Engineers	3		13		5		3		1	
Upper Subordinates	1		1						5	
Overseers	37	15	59	13	39		22	14	2	
Lower Subordinates	1	1	5				5		1	
Surveyors						1				
Draftsmen										
Estimators	5	3	6	1	7			2	2	1
Mechanical and Electrical Engineers			2							
Tracers										
Press Workers	1	1								
Photo Mechanical operators										
Total	48	27	80	14	44	3	12	19	5	7

